JUL 13 1934

It Is a Reasonable Hope That the Professional Patriotism and Consciousness Expressed by the Belief in the Service of Pharmacy and the Related Industries in Giving to the Activities of the American Institute of Pharmacy Will Stimulate and Encourage the Early Completion of the Proposed Endowment Fund.

Vol. XXIII, No. 6 JUNE, 1934

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

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THE 83rd ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN PORTLAND, ORE., IN 1935.

The 1935 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conference of Pharmaceutical Association Secretaries, of the Pharmaceutical Law Enforcement Officials and the Plant Science Seminar will also be held in Portland.

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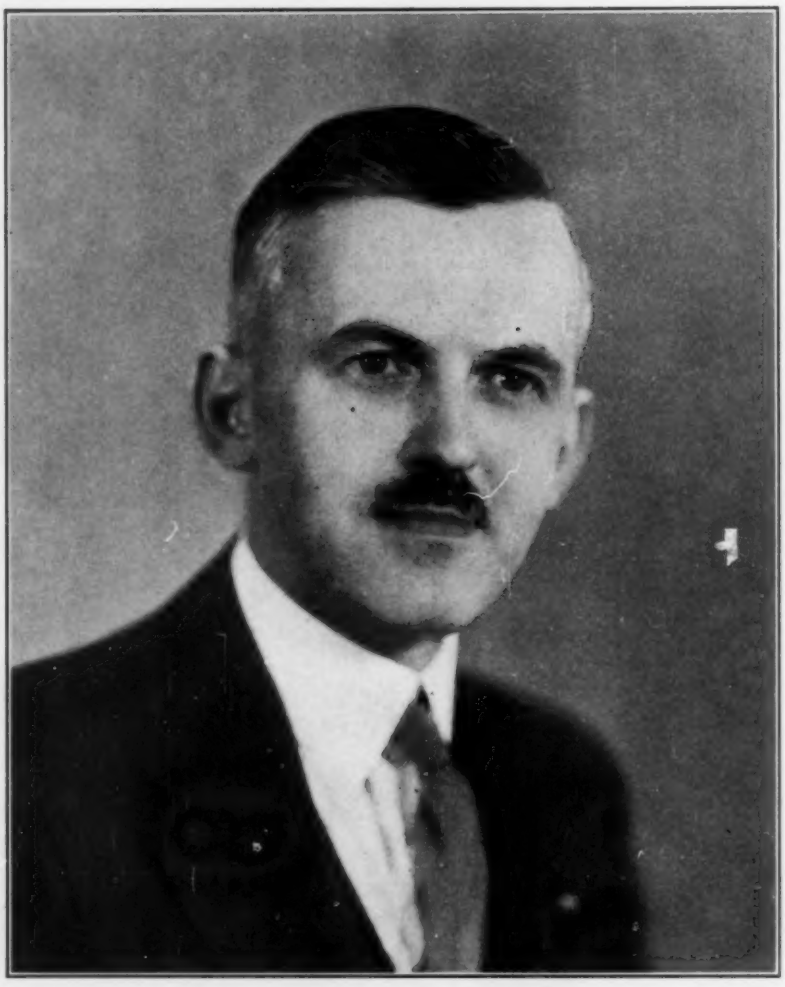
Recent photograph of the American Institute of Pharmacy.



C. T. GILBERT.

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XXIII JUNE, 1934 No. 6

C. THURSTON GILBERT.

C. Thurston Gilbert, the retiring president of the National Association of Boards of Pharmacy, was born in Danbury, Conn., June 6, 1892. He received his early education in the public schools and after completing the high school course in his home city he engaged as apprentice in the Barnum Pharmacy of Danbury.

In 1910 he matriculated at the Philadelphia College of Pharmacy and Science and graduated from that institution in 1913, earning the P.D. degree and was awarded the AMERICAN PHARMACEUTICAL ASSOCIATION membership prize offered by Dean LaWall, for high average in examinations during the course. After graduation he was employed for a time in pharmacies of Ocean City and Atlantic City, N. J. He served in Base Hospital No. 43 at Fort McPherson, Ga., and in a pharmacy of Atlanta, Ga.

Returning to his former home in Connecticut he was appointed postmaster at Noroton Heights and in January of 1918 he purchased a Noroton pharmacy. In 1925, Mr. Gilbert was appointed a Commissioner of Pharmacy and received re-appointment in 1930; he has been president of the Connecticut Board and vice-president and chairman of District No. 1, National Association Boards of Pharmacy. He was delegate to the Pharmacopœial Convention of 1930 and is serving his second term as president of the Southwestern Druggists' Association of Connecticut. His address as president of the National Association Boards of Pharmacy is printed in the May issue of the JOURNAL, page 457.

In 1917 Mr. Gilbert married Miss Maud Alice Porter of Atlanta, Ga. They have one daughter.

EDITORIAL

E. G. EBERLE, EDITOR 2215 Constitution Ave., WASHINGTON, D. C.

SYMBOL OF A TREND.

THE *Washington Evening Star* of May 2nd, presented an editorial under above caption, of which the first paragraph is quoted:

"The beautiful new home of the AMERICAN PHARMACEUTICAL ASSOCIATION, Constitution Avenue at Twenty-Second Street, has a significance exceeding even the important scientific purposes to which it will be dedicated. It represents a tide which is working in the affairs of men. It is a symbol of a trend."

The *Star* indicates the message in the last paragraph of the same editorial.

"The city founded by the Father of His Country and proud to bear his name, it seems clearly indicated, is destined to be the Athens of the Western World, the heart of Western Civilization. The trend is manifest."

Many applications can be made of the thought on pharmaceutical trends. Probably, never in the history of the AMERICAN PHARMACEUTICAL ASSOCIATION was there such evidence of strong desire to firmly establish professional pharmacy so that it may serve fully its purpose in rendering public health service, to work coöperatively with the professions engaged in the interest of public health. The aims and purposes of the American Institute of Health, so ably expressed by Chairman H. A. B. Dunning, evidence the strong desire and determination to move pharmacy upward and forward.

President R. L. Swain in his closing dedicatory remarks, retrospects and looks forward in the closing words:

"As we become aware of the vastness of this project, as our hearts begin to beat in harmony with its great ideals, as we catch a glimpse of the immensity of the principles for which it stands, let us, too, become dedicated to the great tasks remaining before us. Let us resolve that this edifice shall really be our image. Let us be determined to be worthy of it. May we never foreget that the American Institute of Pharmacy is dedicated to those who have contributed their knowledge and endeavor to the preservation of public health and to the further advancement of science in pharmacy."

Chairman P. H. Costello said in substance that we must be guided by past experience in order to make it possible for us to render a greater service in the future.

There are differences of opinion relative to the codes, opposite views, and there are evidences that these sometimes find expression in prejudiced opinions. Few, if any, comprehend the full significance of the new deal; in some cases it can be shown that it is detrimental and has not improved conditions. President R. L. Swain said in his annual address that "the NRA program, the whole code effort, as imperfect and contradictory as it undoubtedly is, is simply the first manifestation of forces seriously devoted to the task of creating a new economic system which will be more responsive to the social impulse. Much of what is being done is highly controversial."

A view relative to the trend is referred to by him in these words:

"I am certain that in due course, and time must be given to working out any fundamental concept, the general principles recognized in the codes will be shown to be advantageous to all branches of industry and society."

President L. D. Havenhill may have pointed to a trend in pharmaceutical education when he closed his address in saying that the modern intellectual development of any young man or woman falls quite naturally into two main divisions: *first*, a non-technical, non-professional, so-called cultural part, and *second*, a technical or purely professional part. After discussing the subject he concludes that "a program of this sort is in line with practices in other professions, and the sooner we enter their company and adopt their point of view the sooner we shall enter into our professional birthright and take our proper place with the professions of medicine and dentistry in helping solve the great problems of health and disease which are so very fundamental and important to our age in civilization."

We are not so much encouraged by conditions as they exist as by the trend toward developing opportunities and the evidence of greater interest in professional pharmacy.

THE PROPOSED NATIONAL PHARMACY COUNCIL.

"Let Us Raise a Standard to Which the Wise and Honest Can Repair. The Event Is in the Hands of God."*

IN the proceedings of the Washington meeting, printed in this issue of the Journal, will be found the outline of a suggestion made at the Second General Session of the Association, when an invitation was given to present new plans for the American Institute of Pharmacy. In response to this proposal there seemed to be a feeling that it presented a great opportunity for American Pharmacy.

A study of the tentative plan reveals that registration becomes a voluntary step, open to every trained pharmacist. Registration will insure an immediate recognition for high professional standing. This is the encouragement and support for which hundreds of pharmacists, who have remained true to the ideals and the standards of the profession, have been waiting.

While the standards for pharmaceutical service must be established and maintained at a high plane of efficiency, nothing that seems impossible or impracticable is proposed. The details, so far as tentatively drafted, embody only those features which most pharmacists are now claiming as their right and as their present objective—a properly trained pharmacist in charge, adequate medical stocks satisfactorily maintained, a suitable professional and a true professional and ethical policy is the entire story. But its compliance must be real.

The cost would not be prohibitive. No matter how small or how large the organization the establishment of such a professional department would be possible. Being truly professional, however, in its basic principles it would of necessity be established only upon the personal integrity of the pharmacist in charge so that the standing and registration of a pharmacy would have to be based upon the application of an individual. It is for American pharmacy to study this opportunity.

"After a general consideration by the Council the Chairman of the Council was authorized to appoint a special committee to consider the proposal and, later, to report to the Council." The committee appointed is composed of the following members: E. N. Gathercoal, Robert L. Swain, H. V. Arny, Edward Spease, Rober R. Gaw, E. F. Kelly, R. P. Fischelis, C. B. Jordan and E. Fullerton Cook, *Chairman*.

* George Washington. Constitution Convention—1787.

SCIENTIFIC SECTION

BOARD OF REVIEW OF PAPERS.—*Chairman*, L. W. Rowe, George D. Beal, F. F. Berg, C. O. Lee, E. V. Lynn, John C. Krantz, Jr., Heber W. Youngken.

THE PREPARATION AND GERMICIDAL PROPERTIES OF SOME ALKYL DERIVATIVES OF HYDROXY DIPHENYLS.*

BY S. E. HARRIS AND W. G. CHRISTIANSEN.

The effect of an alkyl side chain on the bactericidal properties of phenols and other compounds has been the subject of several studies in recent years (1). It appears to be definitely established that the effect of a normal alkyl side chain is to augment greatly the bactericidal value of a phenol. The typhoid activity increases with the size of the alkyl group until a maximum is reached beyond which further increase in the size of the alkyl group results in progressively lowered activity; a maximum has not been found in tests on staphylococcus aureus, *i. e.*, each increase in the size of the alkyl group has been accompanied by a greater activity.

The present study covers the preparation and evaluation of a number of alkylated mono- and dihydroxy diphenyls. It was expected that the alkyl groups producing the greatest activity would be smaller than the groups present in the most active alkyl phenols, cresols and resorcinols, due to the presence of the additional phenyl nucleus, and it was thought probable that the *n*-propyl side chain would be most effective. This expectation was confirmed in the case of the 5-*n*-alkyl 2-hydroxy diphenyls; thus, the *staphylococcus aureus* activity of 2-hydroxy diphenyl is much greater than that of any other member of the series. For the germicidal tests the compounds were dissolved in a solvent consisting of alcohol (25 cc.), glycerin (35 cc.) and water (*q. s.* 100 cc.);[1] unless otherwise stated, the initial solution contained 0.25% of germicide. These solutions were diluted with water as necessary immediately prior to test. The results of these tests are contained in the following table:

TABLE I.

	Dilution at Which Bacteria Are Killed in 5 Minutes. Typhoid.	Staphylococcus.
A. 5-*n*-Alkyl 2-Hydroxy Diphenyls.		
2-hydroxy diphenyl	1–2000	1–800
5-ethyl 2-hydroxy diphenyl	1600	4000
5-*n*-propyl 2-hydroxy diphenyl	400 400	12000 20000
5-*n*-butyl 2-hydroxy diphenyl	400	2000
5-*n*-amyl 2-hydroxy diphenyl	400	1200
B. 3-*n*-Alkyl 2-Hydroxy Diphenyls.		
2-hydroxy diphenyl	1–2000	1–800
3-*n*-propyl 2-hydroxy diphenyl	400	400
3-*n*-butyl 2-hydroxy diphenyl	400	400
3-*n*-amyl 2-hydroxy diphenyl	400	400

* Scientific Section, A. PH. A., Madison meeting, 1933.

[1] This liquid is not in itself germicidal.

C. Alkyl 3-Hydroxy Diphenyls.		
3-hydroxy diphenyl	1–800	1–4000
4-*n*-propyl 3-hydroxy diphenyl*	1000	3000
6-*n*-propyl 3-hydroxy diphenyl*	1000	<1000
D. Alkyl-Dihydroxy Diphenyls.		
2,5-dihydroxy diphenyl[1]	1–500	1–500
4-*n*-propyl 2,5-dihydroxy diphenyl*	<1000	10000
3,4-dihydroxy diphenyl	2000	1200
5-*n*-propyl 3,4-dihydroxy diphenyl[2]	2000	4000

* Initial concentration 1–1000.

[1] Initial concentration 1–250.

[2] Initial concentration 1–2000.

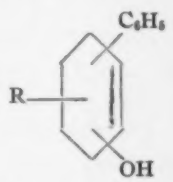
These results show:

(*a*) Alkylation of 2-hydroxy diphenyl in the 3- or 5-position decreases the typhoid activity.

(*b*) Alkylation of 2-hydroxy diphenyl in the 3-position decreases the *staphylococcus aureus* activity whereas alkylation in the 5-position increases it.

(*c*) In the 5-alkyl 2-hydroxy diphenyl series the maximum staphylococcus activity is obtained with the *n*-propyl compound.

(*d*) Propylation of 3-hydroxy diphenyl has little effect on the typhoid activity but decreases the staphylococcus activity. The 6-*n*-propyl 3-hydroxy diphenyl in which the propyl group is para to the hydroxyl group is definitely less active than the 4-*n*-propyl isomer in which the alkyl and hydroxyl groups are ortho to each other. This result is the opposite of that found in the 2-hydroxy diphenyl series; in the latter the compound containing the propyl group para to the hydroxyl group is definitely more active than the ortho isomer. The activity of an alkyl hydroxy diphenyl is therefore dependent upon the relative positions of the alkyl, hydroxyl and phenyl nuclei:



(*e*) Propylation of 2,5- and 3,4-dihydroxy diphenyls has little effect on the typhoid activity but does increase the staphylococcus activity.

The initial concentration of the germicide in the alcohol: glycerin: water solution affects the results of the germicidal test at least in the case of 5-*n*-propyl 2-hydroxy diphenyl (Table II).

TABLE II.

Initial Concentration of 5-*n*-Propyl 2-Hydroxy Diphenyl.	Dilution at Which Bacteria Are Killed in 5 Minutes. Typhoid.	Staphylococcus.
0.25%	1–400	1–12000
	1–400	1–20000
0.10%	1–1000	1–30000
	1–1000	1–20000

The solubility of propylhydroxydiphenyl in water is low and the difference between the germicidal results obtained with 0.25% and 0.1% solutions may be due

to the fact that the larger ratio of alcohol to germicide in the latter case permits greater dilution without throwing the germicide out of true solution. Thus, when 25% alcohol solutions containing 0.25 and 0.1% germicide are diluted so that the concentration of germicide is 1–30,000 (0.0033%) the alcohol concentrations would be 0.33% (with the 0.25% solution) and 0.83% (with the 0.1% solution). The results given in Table I were obtained mainly with 0.25% solutions; a similar series of tests made with 0.1% solutions might give higher activities for some of the compounds. These additional tests would make the work more complete but it is doubtful whether they would alter the conclusions drawn from the data now available.

The presence of sodium hydroxide affects the activity of these phenols; Table III contains a comparison of the results obtained in the absence and presence of alkali. The alkaline solutions contained 0.25% germicide, 10–30% alcohol[1] and sufficient NaOH to yield a clear solution; this varied from 3.8 to 4.6 moles.

TABLE III.

	Dilution at Which Bacteria Are Killed in 5 Minutes. Without NaOH.		With NaOH in Original Solution.	
	Typhoid.	Staphylococcus.	Typhoid.	Staphylococcus.
2-hydroxy diphenyl	1–2000	1–800	1–2000	1–400
5-ethyl-2-hydroxy diphenyl	1–1600	1–4000	1–2800	<1–400
5-*n*-propyl 2-hydroxy diphenyl	1–400	1–12000	1–2800	<1–400
5-*n*-butyl 2-hydroxy diphenyl	1–400	1–2000	1–2000	1–10000
5-*n*-amyl 2-hydroxy diphenyl	1–400	1–1200	1–400	1–2000

The addition of alkali:

(*a*) Decreases the staphylococcus activity of the lower members of the series.
(*b*) Increases the staphylococcus activity of the high members of the series.
(*c*) Increases the typhoid activity of the lower members of the series.
(*d*) Does not increase the typhoid activity of the highest member of the series.

Although these phenolic substances are more readily soluble as the sodium salts, at high dilution these salts frequently hydrolyze to such an extent that the free phenol may begin to crystallize out. Then, too, it is probable that the acidic nature of the phenol diminishes as the size of the alkyl group increases, for it is known that introduction of certain groups into phenols may depress the acidity to such an extent that the compound will not form salts, and becomes insoluble in aqueous alkali.

Thus it is conceivable that the Gm.-negative typhoid bacillus is attacked more readily by the sodium salt of the phenol, and that increased action ceases when the substituted phenol is not materially converted to the salt. In similar manner the Gm.-positive organism staphylococcus appears to be much less vigorously attacked by the sodium salt than by the free phenol. The reversal of relative activity here occurs earlier in the series of progressively heavier substituents, and is much more pronounced.

EXPERIMENTAL.

During the early part of the study the 5-alkyl derivatives were synthesized by condensing the appropriate acid chloride or anhydride with 2-methoxy diphenyl by the Friedel and Craft

[1] Ten per cent in the cases of the ethyl and propyl compounds, 20% in that of the butyl and 30% in that of the amyl.

method. The resulting ketones were reduced by the method of Clemmenson and subsequently demethylated. Considerable losses were experienced during the demethylation and this led to the adoption of an alternative method with notably smoother results. This consisted of rearrangement of fatty acid esters of 2-hydroxy diphenyl by means of aluminum chloride to a mixture of 3- and 5-acyl 2-hydroxy diphenyls. These ketones were separated and reduced to the corresponding alkyl compounds as before, no demethylation being required.

The esters were prepared by the action of the fatty acid on 2-hydroxy diphenyl in the presence of $POCL_3$ at 135° C. Excellent yields were obtained of viscous, colorless liquids which we were not able to obtain in crystalline form; an exception to this was the acetate which was obtained as white needles from dilute alcohol, m. p. 64° C. In spite of repeated fractionation or cooling to low temperatures, no other ester would crystallize.

The rearrangement of the esters was accomplished by heating to 160° C. with anhydrous aluminum chloride for half an hour. This gave the aluminum chloride compound of the mixed ketones in the form of a hard glassy mass which was decomposed in the usual way with dilute HCl. The separation was conveniently brought about by extracting the mixture with petroleum ether in which the 3-acyl compounds were readily soluble. The insoluble 5-acyl compounds which gave no red color with $FeCl_3$ were filtered off and recrystallized from a mixture of ether or benzol and petroleum ether. The 3-acyl compounds were obtained by evaporating the solvent and distilling the residue. These gave a deep red color with $FeCl_3$.

It was observed that the length of the side chain had a marked effect on the products of rearrangement, the 5-acyl compound being the predominant product with shorter chains and a larger proportion of the 3-acyl compound being obtained when the *n*-butyric and *n*-valeric esters were rearranged.

In spite of carefully standardized conditions, very variable yields of the alkyl derivatives were obtained on reducing these ketones. The lost material was always encountered as a resin-like distillation residue from which all attempts to isolate crystalline products failed. It is conceivable that these compounds are condensation products of the pinacone type. A single detailed example of each typical reaction is given.

2-HYDROXY DIPHENYL PROPIONATE (2-PHENYL-PHENYLPROPIONATE).

One mol. of 2-hydroxy diphenyl was dissolved in one mol. of propionic acid and the mixture heated to 135° C. under reflux with mechanical agitation. 0.5 mol. $POCl_3$(or PCl_3) was then added slowly and the mixture maintained at 135° C. till HCl was no longer evolved. The ester was then decanted from the phosphorous acid, washed with water and dissolved in ether. After being dried over $CaCl_2$, the ether was evaporated and the residue distilled; b. p., 151–152° C. at 4 mm. Yield, 90%.

REARRANGEMENT OF 2-HYDROXY DIPHENYL PROPIONATE.

1.1 mols. of powdered anhydrous aluminum chloride were added in small portions to one mol. of 2-hydroxy diphenyl propionate. Considerable heat developed and HCl was evolved. The mixture was then heated in an oil-bath at 160° C. for 30–45 minutes. The glassy reaction product was cooled, powdered and decomposed by adding gradually to well-stirred 5% HCl. The decomposition was completed by warming on the steam-bath for a short time. The mixture of 3- and 5-propionyl 2-hydroxy diphenyl was filtered off, washed with dilute HCl and water and dried. The dried product was extracted with a large volume of boiling petroleum ether, b. p. 40–60° C., and the undissolved 5-propionyl 2-hydroxy diphenyl filtered off. After recrystallization from a mixture of ether and petroleum ether, 5-propionyl 2-hydroxy diphenyl was obtained as a white powder, m. p. 151–152° C. (2).

The petroleum-ether extract was evaporated and the residue distilled, yielding 3-propionyl 2-hydroxy diphenyl, b. p. 183–185° C./3.5 mm.

5-*n*-PROPYL 2-HYDROXY DIPHENYL.

One part by weight of 5-propionyl 2-hydroxy diphenyl was refluxed during 10–12 hours with 4 parts amalgamated mossy zinc and 15 parts 20% HCl. Brisk mechanical agitation during the reduction greatly reduced the time necessary for complete reduction. The oily product formed was separated from the acid liquor and washed with hot water. After drying with anhydrous

Na_2SO_4 in ether solution the ether was removed and the residue distilled; b. p. 171–172° C./9 mm.; yield, 90%.

TABLE IV.

2-Hydroxy Diphenyl Derivatives.	B. P. or M. P.	Yield, %.	Found. C.	Found. H.	Calculated. C.	Calculated. H.
Propionate	151–152°/4	85–90	79.6	6.32	79.6	6.2
n-butyrate	154/3.5	90	80.5	6.7	80.0	6.7
n-valerate	162–167°/4	80	80.8	7.2	80.3	7.1
3-propionyl	183–185/3.5	8	79.7	6.3	79.6	6.2
5-propionyl	M. p., 151–152	*				
3-*n*-butyryl	185–190/3.5	15	80.0	6.7	80.0	6.7
5-*n*-butyryl	M. p., 116–117	40	79.3	6.7	80.0	6.7
3-*n*-valeryl	200–210°/5	20	79.8	6.34	80.3	7.09
5-*n*-valeryl	M. p., 104	40	79.8	7.13	80.3	7.09
5-ethyl	152/5	10[1]	84.6	7.2	84.8	7.10
3-*n*-propyl	155–160/8	90	84.7	7.46	84.9	7.55
5-*n*-propyl	171–172/9	90	84.5	7.9	84.9	7.55
3-*n*-butyl	160–167/4	50	84.6	7.93	84.9	7.96
5-*n*-butyl	173–175/6	75	84.4	8.08	84.9	7.96
3-*n*-amyl	166–171/5	50	84.7	8.32	85.0	8.33
5-*n*-amyl	181–183/6	65	85.5	8.41	85.0	8.33
2-Methoxy Diphenyl Derivatives.						
5-acetyl	M. p., 90–90.5	46	79.8	6.31	79.7	6.2
5-propionyl	M. p., 93–94	50	79.3	6.54	80.0	6.7
5-*n*-valeryl	202–204/4	40	80.1	7.45	80.6	7.1
5-ethyl	163–166/7	70	85.2	7.6	84.9	7.6
5-*n*-propyl	171–172/9	90	85.5	7.9	85.0	8.0
5-*n*-amyl	178–182/5	61	84.3	8.4	85.0	8.7
3-Hydroxy Diphenyl Derivatives.						
Propionate	160–165/2	84.5	79.0	6.06	79.6	6.19
4-propionyl	M. p., 109	71.0	79.6	6.23	79.6	6.19
4-*n*-propyl	162–3/3 M. p., 56–56.5	62.0	85.0	7.48	84.9	7.55
3-methoxy	140/5	90.0	85.0	6.45	84.8	6.52
6-propionyl 3-methoxy	M. p., 72	75.0	79.6	6.40	80.0	6.67
6-*n*-propyl 3-methoxy	153–170/3	70.0	84.4	7.99	85.0	7.97
6-*n*-propyl 3-hydroxy	M. p., 140–141	1.0	Mol. wt. in C_6H_6. Found, 219; calcd., 212.			
Dihydroxy Diphenyl Derivatives.						
3,4-dimethoxy	153/4 M. p., 70	90	78.7	6.56	78.5	6.54
5-propionyl 3,4-dimethoxy	228–30/3 M. p., 113	10	75.0	7.16	75.6	6.67
5-*n*-propyl 3,4-dimethoxy	195–210/7	90	80.1	7.61	79.7	7.81
5-*n*-propyl 3,4-dihydroxy	Not determined	2	80.5	7.07	79.0	7.02
2,5-dimethoxy diphenyl	147–149/4	85	77.9	6.38	78.5	6.54
4-propionyl 2,5-dihydroxy	220–230/6 M. p., 138–139	15	74.5	6.07	74.4	5.78
4-*n*-propyl 2,5-dihydroxy	195/9	90	78.7	7.38	79.0	7.02

* Reference (2).

[1] By demethylation of 2-methoxy 5-ethyl diphenyl.

5-ACETYL 2-METHOXY DIPHENYL (3).

78 Gm. (2 mols.) 2-methoxy diphenyl were dissolved in 150 cc. dry carbon disulphide and 112 Gm. anhydrous aluminum chloride were added slowly with external cooling. The mixture was well stirred and refluxed gently on the water-bath while 31 Gm. acetic anhydride (2 mols.) were added during about one hour. The refluxing and stirring was continued for a further period of one hour and the carbon disulphide distilled off. The residue was decomposed with ice and HCl and the ketone extracted with ether. The extract was washed with water, dilute NaOH and again with water, and then dried with $CaCl_2$. After distilling off the ether, the residue was distilled, b. p. 194–204° C./6 mm. The reddish distillate solidified on cooling and after recrystallization from petroleum ether had a melting point of 90–90.5° C.; yield, 46%.

ALKYL 3-HYDROXY DIPHENYLS.

(*a*) *4-n-Propyl 3-Hydroxy Diphenyl.*—This was prepared by the rearrangement of 3-phenyl phenyl propionate and reductions of the resulting ketone as described under the preparation of 5-alkyl 2-hydroxy diphenyls. The intermediate ketone gave a deep red color with ferric chloride solution and was therefore assumed to be the 4-acyl derivative. The introduction of the acyl group into the 2-position is considered unlikely, owing to the stoic hindrance of the phenyl group.

(*b*) *6-n-Propyl 3-Hydroxy Diphenyl.*—Since the entire product of the ester rearrangement was the 4-acyl compound, the preparation of the 6-acyl 3-hydroxy diphenyl was necessarily carried out by the Friedel and Craft method on 3-methoxy diphenyl. The reaction conditions for the acylation of 3-methoxy diphenyl were exactly those described under 5-acetyl 2-methoxy diphenyl and reference (3). The resulting ketone, which gave no color with ferric chloride was reduced in the manner previously described for 5-*n*-propyl 2-hydroxy diphenyl.

On attempting to demethylate the 6-*n*-propyl 3-methoxy diphenyl by heating with hydriodic acid in glacial acetic acid much decomposition took place, only a small quantity of the desired 3-hydroxy 6-*n*-propyl diphenyl being obtained.

DIHYDROXY DIPHENYL DERIVATIVES.

The rearrangement of mono-propionic esters of 3,4-dihydroxy diphenyl and 2,5-dihydroxy diphenyl gave tarry products from which no definite compounds could be isolated. Direct introduction of acyl groups into the dimethyl ethers gave very poor yields, most of the ethers being recovered unchanged. In the case of 3,4-dimethoxy diphenyl a 10% yield of 5-propionyl 3,4-dimethoxy diphenyl was obtained while in the case of 2,5-dimethoxy diphenyl demethylation took place at the same time, giving a 15% yield of 6-propionyl 2,5-dihydroxy diphenyl. Various reaction-conditions were tried with little success. The above results were obtained when the methods described in reference (3) were followed. Both of the dihydroxy propionyl diphenyls gave a deep red color with $FeCl_3$.

The biological tests on compounds reported herein were made in the Biological Research Laboratories of E. R. Squibb & Sons and we gratefully acknowledge their assistance.

SUMMARY.

A number of 3-alkyl and 5-alkyl 2-hydroxy diphenyls and propyl derivatives of 3-hydroxy diphenyl and of two dihydroxy diphenyls have been prepared and tested for germicidal activity. The 5-alkyl 2-hydroxy diphenyls were obtained by (*a*) the Friedel and Craft reaction on 2-methoxy diphenyl, and (*b*) rearrangement of the fatty acid ester of 2-hydroxy diphenyl. The rearrangement method gave the 3-alkyl compounds as by-products.

Bactericidal tests showed that the 3-alkyl compounds are comparatively inactive and that the 5-alkyl compounds have a markedly specific activity; the potency against *Staphylococcus aureus* being high compared with that against *B. Typhosus*. Of the 5-alkyl 2-hydroxy diphenyls, the 5-*n*-propyl was by far the most active.

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ISOMERIC NITRO-CRESOLS.*

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In the preparation of a series of mercurials, it was necessary first to obtain the ten isomeric nitro-cresols. Most of the research on these compounds is found in the earlier literature, very little having been done in recent years. The methods vary and are in many cases indefinite and the results obtained by their use do not always lead to the conclusions described, either in yield or quality of the material.

We believe that a condensed comparison of the known methods coupled with a reference to the preparation of each isomer in the best obtainable yields and purity would be of service to the organic chemist. In those cases where we have improved the methods, a detailed description of the compound is given. We present, moreover, methods which involve the least expense in starting material and complication in process.

The nitro-cresols are prepared either by direct nitration of the cresol, resulting in single derivatives or mixtures, or by diazotization and subsequent replacement of the corresponding nitro-toluidine. The nitro-toluidines are prepared by direct nitration of the toluidines. In a few instances the nitro-cresols can also be prepared by simultaneous diazotization and nitration of the toluidines. The 5-nitro-2-hydroxy-toluene is also prepared by oxidation of the 5-nitroso derivative.

However, in the case of two isomers, the 6-nitro-2-hydroxy-toluene and 5-nitro-3-hydroxy-toluene, it is unavoidable to employ roundabout procedures inasmuch as the nitro group cannot be introduced, in the desired position, directly into the nucleus either of the cresol or the corresponding toluidine. In fact, we have as yet been unsuccessful in isolating any definite quantity of the former according to the described methods, but we are still working on what may prove a successful attempt.

DISCUSSION AND EXPERIMENTAL PART—NITRO-ORTHO-CRESOLS.

3-Nitro-2-Hydroxy-1-Methyl-Benzene.—This was prepared by Wohl (1) using a mixture of meta-nitro-toluene and powdered alkali, keeping the temperature below 40° C. The material had to be mixed thoroughly for 24 hours and the unchanged nitro-toluene, of which there was a considerable quantity, separated from the sodium salt of the nitro-cresol.

Noelting and Wild (2) diazotized ortho-toluidine in dilute H_2SO_4 and after adding dilute HNO_3 heated the mixture until no further evolution of nitrogen took place. The nitro-cresol was

* Scientific Section, A. PH. A., Madison meeting, 1933.

separated by steam distillation. Deninger (3) similarly used a large excess of sodium nitrite and omitted the nitric acid. The yields in either case were poor.

Nitration of *o*-cresol in presence of acetic acid was tried by Hofman and Miller (4), Rapp (5), Hirsch (6) and Gibson (7). In this way a better yield of the 3-nitro compound is obtained but it is contaminated with the 5-nitro and 3-5-dinitro compounds. They can be separated by steam distillation. The 5-nitro derivative is non-volatile with steam. We have observed that the 3-nitro-cresol distils over almost entirely, and after an interval is followed by the dinitro compound, which is also much lighter in color and a finer crystal than the mono-nitro derivative.

The method which gives the best yield of the 3-nitro-2-hydroxy methyl-benzene without much contamination of the di-nitro compound is that of Schultz (8), using benzene as a medium. Although he also claims a large yield of the 5-nitro-2-hydroxy methyl benzene, we were able to obtain only about 5% of this compound. However, by using a lower temperature (0° to 5°) we increased the yield of the 3-nitro isomer to 31%.

4-Nitro-2-Hydroxy-1-Methyl-Benzene.—This was first prepared by Noelting and Collin (9) by diazotization of the corresponding nitro-toluidine in dilute H_2SO_4 and then allowing the mixture to stand, finally warming on a steam-bath to complete evolution of nitrogen. The above authors obtained a good yield of a material which melted at 106–108°. Later it was proven by Witt, Noelting and Grandmougin (10) that the above reaction does not take place entirely in the direction desired, but that a large amount of material shown to be 6-nitro-indazole is also formed. They and others (11) attempted to separate the nitro-indazole by fractional crystallization and also by use of its insolubility in Na_2CO_3 solution. This of course reduced the yield of the nitro-cresol.

Ullman and Fitzenkam (12) devised a method which gave practically no nitro-indazole and a good yield of nitro-cresol. They added the diazo solutions slowly to boiling dilute sulphuric acid and separated the nitro-cresol on cooling. We have obtained yields as high as 85% with this method.

Ortho-toluidine is dissolved in 10 volumes of concentrated H_2SO_4 and nitrated with an equivalent of concentrated HNO_3 at 0° C. The mixture is poured into ice and water and the nitro-toluidine sulphate is filtered off. This is dissolved in water and Na_2CO_3 added until neutral and the 4-nitro-2-amino-methyl benzene filtered off, washed and recrystallized from alcohol. M. p.—107°. Yield = 90%.

40 Gm. of this nitro-toluidine are dissolved in 600 cc. of 10% H_2SO_4, warming to dissolve. On cooling to 0° some crystals of sulphate separate. Add slowly, with good stirring, a solution of 18 Gm. of sodium nitrite in 50 cc. H_2O, keeping the temperature at 0°. Stir for 15 minutes after all is added. A clear solution is obtained. Add this cold solution, over a period of 15 minutes to a boiling solution of 400 cc. concentrated H_2SO_4 in 800 cc. H_2O—a brisk evolution of nitrogen occurs. Boil further for 10 minutes and cool thoroughly. A brown oily material which forms on surface solidifies and crystals form in solution. Filter and wash with cold water. The crude material melts from 109° to 114° C. It can be purified by solution in alcohol, treatment with "nuchar" and precipitation with H_2O, or by solution in dilute NaOH, warming to 60° with small quantity of "nuchar," filtering and acidification with dilute hydrochloric acid. Cool and filter off crystals. Yield = 34 Gm. (85%). Pale yellow needles, m. p.—118°.

5-Nitro-2-Hydroxy-1-Methyl-Benzene.—As was previously shown (4), (5), (6), (7), this compound was formed simultaneously with the 3-nitro-2-hydroxy-toluene but in small quantities, and was extracted from the tarry residue of the steam distillation only by long and tedious boiling with successive portions of water. By diazotization of the corresponding nitro-toluidine and replacement of the diazo group by hydroxyl or by boiling the nitro-toluidine with strong aqueous alkali (13) better yields are obtained. However, the above toluidine is difficultly separated from the corresponding 3-nitro derivative.

Borsche and Birkhout (14) prepared a homogeneous product in good yields by the oxidation of 5-nitroso-2-hydroxy-toluene with potassium ferricyanide. We have devised a method, using nitric acid as the oxidant, which gives a pure nitro

compound without any contamination of dinitro or 3-nitro isomer, in yields of about 80–85%. This is a simpler and shorter method than the ferricyanide oxidation which involves several days' standing.

35 Gm. of solid sodium nitrite are added to a suspension of 27 Gm. of *o*-cresol in 2 liters of ice water with mechanical stirring. A solution of 9.5 cc. of concentrated sulphuric acid in 200 cc. of H_2O is then added during the course of 1 hour, keeping temperature below 5° by further addition of ice. Allow to stand for 2 hours in cold. Filter off the nitroso compound, wash with ice water. This crude material can be used for the further oxidation. A small sample recrystallized from benzene melted at 136°.

27.5 Gm. of the crude nitroso compound are suspended in 200 cc. of a mixture of 1 part of concentrated nitric acid and 3 parts of water. This is agitated and cooled from time to time to prevent decomposition. After three hours the solid material is filtered and washed with water. It is purified by solution in 5% sodium hydroxide, treatment with charcoal and precipitation with dilute HCl (10%), which is added dropwise while cooling the alkaline solution. It separates as pale brownish yellow needles. M. p.—91°. The yield is 25 Gm. or about 82%.

6-Nitro-2-Hydroxy-1-Methyl-Benzene.—Since this isomer cannot be prepared by nitration of cresol, it must be obtained by the replacement of the diazo group from the corresponding toluidine. Green and Lawson (15) claimed that this nitro-toluidine was obtained simultaneously with the 4-nitro-2-amino-toluene by nitrating ortho-toluidine in sulphuric acid. They maintained that by fractional crystallization of the hydrochlorides they separated the more difficultly soluble 6-nitro-toluidine. We were unable to obtain any of this material even when the conditions of the toluidine nitration were varied. Cunerth (16), by nitration of toluene, obtained besides the 2-4-dinitro toluene, an oily substance (2-6-dinitro toluene) which he reduced with ammonium sulphide and claimed to obtain the 6-nitro-toluidine. His yields, however, are not given and the quantities of the oily dinitro toluene obtained are so small that we could not obtain a sufficient quantity for further reduction. Beilstein (17), Holleman (18) and Cohen (19) attempted to obtain the 2-6-dinitro toluene by reduction of the 2-4-6-trinitro-toluene to 2-6-dinitro-*p*-toluidine and subsequent elimination of the amino group by diazotizing and decomposing in absolute alcohol.

The trinitro-toluene is expensive, and when we attempted to reduce it by the above methods the yields were very poor, only a trace of the dinitro-toluidine being formed. Staedel (20) claims that in nitration of *o*-phthalyl-toluidide, two nitro derivatives are formed which on hydrolysis yield two corresponding nitro-toluidines one of which is the 6-nitro-2-amino-toluene. We are working on this method and may obtain some measure of success.

NITRO-META-CRESOLS.

2-Nitro-3-Hydroxy-1-Methyl-Benzene.—This material was originally considered an impurity which occurred with 4-nitro-3-hydroxy-toluene. However, Khotinsky and Jacobson-Jacobman (21) showed that in using *m*-toluidine in Deninger's (3) and Noelting's (2) methods, when the mixture was steam distilled, another volatile product was carried over which did not crystallize in the distillate. It remained oily and also was somewhat soluble in the aqueous portion of the distillate. The latter was extracted with ether after filtering off the crystalline 4-nitro derivative. More of the oily substance can be expressed from the crystals. On evaporation of the ether a dark oily substance remains which will not crystallize on cooling. It cannot be distilled without decomposition. It forms a dark red sodium salt. Khotinsky prepared a methoxy derivative which melted at 88°.

Gibson (22) could not isolate the 2-nitro-cresol from this methoxy derivative. He used the method of Kaufmann and de Pay (23) for the preparation of nitro-resorcinol, which involves first a di-sulphonation, then nitration with subsequent splitting off of the sulphonic acid groups by superheated steam. From meta-cresol he obtained a yield of yellow oil (80%) which would not crystallize, but which gave a methoxy derivative melting at 54° and an acetyl derivative, m. p.—59°.

By hydrolysis of this acetyl derivative and steam distillation of the product he obtained an oil which crystallized, m. p.—41°. Hodgson and Beard (24) modified Gibson's method by using a stronger fuming sulphuric acid and higher temperature in the initial sulphonation and obtained a product which solidified after the first steam distillation. We are using this method for the preparation of 2-nitro-3-hydroxy-toluene.

4-Nitro-3-Hydroxy-1-Methyl-Benzene.—This compound is obtained simultaneously with the 2-nitro and 6-nitro isomers as shown above (21). Khotinsky observed that using Staedel's (25) method and lowering the temperature in the reaction mixture to −8° to −5° the best yields of 4-nitro-3-hydroxy-toluene were obtained with correspondingly smaller amounts of the 6-nitro isomer and practically none of the 2-nitro derivative.

However, cooling and maintaining the reaction mixture at this temperature is rather difficult when using an ordinary ice-salt freezing mixture. Since ice could not be added directly to the reaction it was necessary to find some material which could, and at the same time have no effect in the reaction. We employed solid carbon dioxide (26) and found it rather easy to obtain temperatures as low as −15° to −20° C. with addition of only small amounts of solid CO_2. However, such low temperatures at the beginning of the nitration caused the acetic acid to crystallize and made it very difficult to stir to obtain a smooth reaction. We finally added only a small amount of CO_2, lowering the temperature to −5°, and then after adding some of the cresol mixture, maintained the temperature at −10° to −12° by gradual addition of solid CO_2. The nitration can be done quickly and easily controlled within the desired temperature range, and at the same time better yields of the 4-nitro-cresol are obtained due to the low temperature.

100 Gm. of *m*-cresol are dissolved in 100 cc. of glacial acetic acid. This is added to a solution of 114 cc. of concentrated nitric acid in 290 cc. of glacial acetic acid which has been cooled to −5° by the addition of a few pieces of dry ice (solid CO_2) about the size of small nuts. As the cresol mixture is added, gradually increase the amount of dry ice until the temperature reaches −12° C. and maintain thus until the end of the reaction. The mixture is then added to 2 liters of ice water. Filter off the precipitate and steam distil. In the distillate the 4-nitro-3-hydroxy-toluene separates. Yield 33 Gm. or 25%. It can be recrystallized by solution in alcohol and precipitation in water. It separates as yellow needles. M. p.—56°. The residue from the steam distillation contains about 60% of 6-nitro-3-hydroxy toluene which can be extracted by boiling water.

5-Nitro-3-Hydroxy-1-Methyl-Benzene.—By direct nitration of *m*-cresol or by simultaneous diazotization and nitration of *m*-toluidine, this compound cannot be obtained, due to the directing influence of the hydroxyl group. It is first necessary to prepare the corresponding 5-nitro-3-amino-toluene. This also cannot be prepared from the *m*-toluidine by direct nitration. Staedel (27) prepared it by a complicated procedure. He nitrated *p*-acetyl toluidine using an excess of fuming nitric acid forming 3-5-dinitro-*p*-acetyl toluidine. This is hydrolyzed by refluxing with alcoholic NaOH. The resulting 3-5-dinitro-*p*-toluidine is then diazotized in concentrated nitric acid, and the diazo-nitrate added gradually to boiling absolute alcohol. The mixture is cooled quickly and added to a double volume of water. The precipitate is 3-5-dinitrotoluol. M. p.—91°. This is then reduced by alcoholic ammonium sulphide to 5-nitro-3-amino-toluene. In some of these steps the yields were not given and we found them to be rather low. The nitro-cresol is obtained from the nitro-toluidine using the method as in the case of 4-nitro-2-hydroxy-toluene. The yield is low, only about 30%. Recrystallized from benzene it melts at 89° C.

6-Nitro-3-Hydroxy-1-Methyl-Benzene.—It is the chief product in all methods mentioned above in which either *m*-toluidine or *m*-cresol are the starting materials. By allowing the temperature to rise to 5°, in the nitration using acetic acid, the proportion of the 6-nitro-cresol can be increased.

In order to separate the 6-nitro-cresol from the other isomers it was previously necessary to steam distil the mixture, the 6-nitro-derivative being non-volatile with steam. We have found, however, that by extracting with boiling benzene practically all of the 2-nitro and 4-nitro isomers are removed and the difficultly soluble 6-nitro-3-hydroxy toluene remains, which after recrystallization from water is pure. M. p.—130° C.

The steam distillation can also be avoided by nitration of *m*-toluidine in sulphuric acid, obtaining 6-nitro-3-amino-toluene without contamination of any isomers. This can then be diazotized and converted into the corresponding cresol, according to the procedure employed in the preparation of 4-nitro-2-hydroxy-toluene and 5-nitro-3-hydroxy-toluene. The yield in the last step averaged 60%.

NITRO-PARA-CRESOLS.

2-Nitro-4-Hydroxy-1-Methyl-Benzene.—By direct nitration of *p*-cresol practically none of this isomer is formed. Simultaneous diazotization and nitration of *p*-toluidine according to method of Noelting (2), produces very little of the 2-nitro derivative. However, Noelting (28) found that in nitrating *p*-toluidine in sulphuric acid the 2-nitro-4-amino-toluene was obtained without any contamination of the 3-nitro-toluidine, especially when large amounts of H_2SO_4 were used. Copisarow (29) using an adaptation of the method of Holleman and Holflake (30) prepared 2-nitro-*p*-hydroxy-toluene by nitrating *p*-cresyl carbonate. Lucas and Liu (31) studied this reaction and explained the introduction of the nitro group meta to the hydroxyl as due to the formation of the oxonium salt.

Knecht (32) and Nevile and Winther (12) converted the nitro-toluidine into nitro-cresol by diazotization and replacement of amino group, using gentle heating with dilute sulphuric acid.

We found that these latter methods gave poor yields and in some cases no cresol at all, only tar resulting from the reaction. We applied the Ullman method, as used in the case of 4-nitro-2-hydroxy-toluene, and found it gave better results. Care must be taken that in the addition of the diazotized solution of the nitro-toluidine to the boiling sulphuric acid, heating should be continued until the red color which first forms changes to yellow. This may take over a half hour but it is necessary to obtain a good yield. A reflux condenser should not be used during the reaction, inasmuch as it seems to retard the color change. On cooling, the crude 2-nitrocresol separates. The yield after recrystallization from water is 50–55%. It separates as yellow prisms. M. p.—77–78°.

3-Nitro-4-Hydroxy-1-Methyl-Benzene.—Hofmann and Miller (4), Staedel (25), Frische (33) nitrated *p*-cresol in acetic acid and obtained fair yields of 3-nitro derivative. By use of the methods of Noelting (2) and Deninger (3), starting with *p*-toluidine, we obtained good yields. The nitro-cresol can be obtained from the corresponding nitro-toluidine (Nevile (12)), which in turn is prepared by nitration of *p*-acetyl toluidine with fuming nitric acid (sp. gr. = 1.5) (34). Schultz (8) claimed yields of 85–90% by nitrating *p*-cresol in benzene. Using this method we were unable to duplicate the yields, averaging only about 40%. We finally adopted the method of Brasch and Freyss (35), by which we obtained consistent yields of 70–75%.

SUMMARY.

1. Nine of the ten possible isomeric nitro-cresols have been studied.

2. The methods of preparation described in the available literature have been discussed.

3. We have improved these methods and given in each case the procedure assuring the best results as to yield, purity and low cost of preparation.

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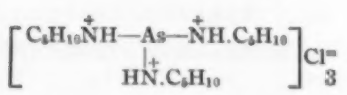
ARSENOUS CHLORIDE AND 1,4-DIOXANE.*

BY G. O. DOAK.

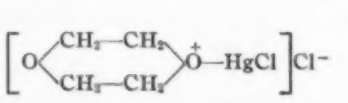
It has been shown in previous reports that arsenous chloride reacts with amines to form substituted ammonium halides, in which one, two or three of the chlorines were replaced by amine groups, the halogens being ionized in the resulting complex (1,9). Thus for example piperidine and arsenous chloride form the compound $(C_5H_{10}N.HCl)_3As$ which may be written structurally as:

* Scientific Section, A. PH. A., Madison meeting, 1933.



It is known that many oxygen compounds will form oxonium salts with acids and there is therefore a possibility that a compound in which the oxygen is relatively basic might combine with arsenous chloride to form a substituted oxonium halide similar to the ammonium halides formed between amines and arsenous chloride. Bayer and Villiger (2) have pointed out that the same factors that influence the basicity of nitrogen do the same with oxygen. Thus alkyl groups increase the basicity, phenyl groups decrease it. They showed also that oxygen in such compounds as cineol and dimethyl pyrone is strongly basic. Collie and Tickle (3) showed that dimethyl pyrone and diacetylacetone formed oxonium salts with a number of acids.

Dioxane having become readily available in a fairly pure state, it seemed desirable to study its additive capacity toward $AsCl_3$. Paterno and Spallino (4) have shown that this substance combines with mercuric chloride to give a compound of the formula $(C_4H_8O_2).HgCl_2$. If this is regarded as an oxonium salt it will possess the structure



1,4-Dioxane also forms a sulphate $(C_4H_8O_2)_2H_2SO_4$, which may also be regarded as an oxonium salt.

Experimental.—Commercial 1,4-dioxane was dried for one week over metallic sodium and distilled, the fraction boiling 101–102° being taken. 26.4 Gm. ($^3/_{10}$ mole) were placed in a flask cooled with ice, and equipped with a mechanical stirrer, and 9.06 Gm. ($^1/_{20}$ mole) of arsenous chloride added dropwise. At first there was no sign of a reaction, then a heavy white precipitate formed. When all the arsenous chloride had been added the mixture was warmed. The precipitate dissolved on slight warming but crystallized out on cooling. The crystals were filtered off, and a second crop obtained by evaporating the solvent. Yield of crystalline substance—6 Gm. The crystalline product was soluble in ethyl-alcohol, ethyl ether, acetone and benzene, insoluble in cold heptane, soluble in warm heptane. With water a precipitate of arsenous oxide was formed. Melting point, 62° C. It possessed a strong odor of arsenous chloride, appeared to be deliquescent and left an oily spot on paper.

Chlorine analysis according to Stepanow (5) yielded 33.66% and 33.86%.

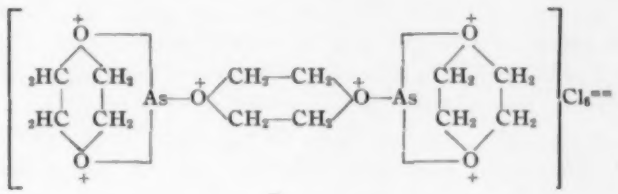
Arsenic analysis according to Morgan and Walton (6) yielded 23.84% and 23.69%.

These results would correspond to the formula $(C_4H_8O_2)_32AsCl_3$ with a chlorine content of 33.67% and an arsenic content of 23.93%.

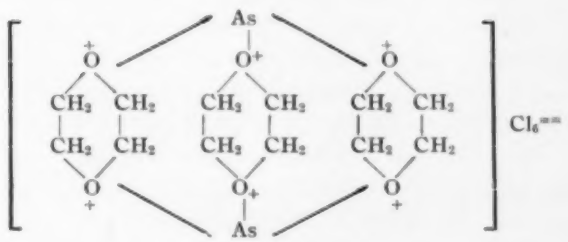
However, the substance appeared to be quite hygroscopic and it is possible that it may be a hydrate. Thus for the formula $(C_4H_8O_2).AsCl_3.2H_2O$, the theoretical value for chlorine is 34.55% and for arsenic 24.55%. The reaction was run a second time, taking precautions that all moisture was excluded, and the crystals dried for two days over P_2O_5 in a vacuum. The sample for analysis was transferred from the desiccator to a tared weighing bottle filled with absolute alcohol. In this way the absorption of moisture from the air was prevented during the weighing process. Chlorine found, 33.57%. It is thus apparent that the substance is not a hydrate but corresponds to the formula $(C_4H_8O_2)_3.2AsCl_3$.

The molecular weight was determined in benzene by depression of the freezing point. Molecular weight found, 157; theoretical for $(C_4H_8O_2)_3.2AsCl_3$, 626.6. It is apparently highly dissociated in benzene solution. Unless it ionizes to give three chlorine ions and a positive ion

(157 × 4 = 628) which seems unlikely the substance cannot be completely dissociated in benzene. It would seem most probable that it dissociates into its component molecules $3C_4H_8O_2$ and $2AsCl_3$, which should give a molecular weight of 125 if completely dissociated. According to the Nernst-Thompson rule the dielectric constant of the solvent greatly influences the dissociation of the solute; hence, if this substance is dissolved in a solvent of higher dielectric constant there should be greater dissociation and hence a smaller molecular weight. Acetone was chosen as a solvent. (Dielectric constant for acetone 21.4, for benzene 2.82 (7).) Molecular weight was determined by elevation of the boiling point using the McCoy apparatus (8). Molecular weight found, 148.4. It would thus appear that the substance is highly dissociated, more so in acetone than in benzene. If it is an oxonium halide two structures are possible.



I.



II.

I is the more probable as it contains five-membered rings as compared to ten-membered in II. In support of the oxonium structure, the substance dissolved in absolute alcohol precipitates silver chloride with alcoholic silver nitrate solution, while arsenous chloride in absolute alcohol gives no precipitate with alcoholic silver nitrate. This indicates that even in a solvent possessing such high dissociating powers as ethyl alcohol, chlorine is present as chloride ion.

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A STUDY OF THE CONSTITUENTS OF SIAM BENZOIN IN RELATION TO THEIR PRESERVATIVE ACTION ON LARD.*[1]

BY WILLIAM J. HUSA[2] AND DONALD E. RILEY.[3]

INTRODUCTION.

The preservative action of benzoin on lard was discovered in France by Deschamps (1) in 1843, and since that time benzoinated lard has become official in a dozen of the leading pharmacopœias of the world (2). Although Siam benzoin is widely used as a preservative of fats, the mechanism of its effect of retarding the development of rancidity has not been well understood. The stabilizing effect of benzoin was commonly ascribed to the antiseptic action of its constituents, until Husa and Husa (3), in 1926, called attention to the inadequacy of this explanation and indicated that the benzoin probably functions as a negative catalyst of oxidation. A search of the literature having shown a lack of agreement as to which constituents of benzoin are effective in retarding the rancidity of lard, the effect having been variously ascribed to benzoic acid, cinnamic acid, volatile oil, resin and odorous constituents, Husa and Husa (3) carried out experiments which proved that benzoic acid and cinnamic acid are not effective in retarding the development of rancidity in lard. Although the value of benzoin as a preservative of lard seemed well established in the older literature, some question arose as to whether or not it really exerted a preservative action, hence some experiments were carried out on this point in 1930 by Husa (4) and it was found that plain lard deteriorated several times as rapidly as benzoinated lard.

It having thus been shown that Siam benzoin has a definite preservative action on lard, due to some constituents other than benzoic and cinnamic acids, the present investigation was carried out with the purpose of determining which constituents of Siam benzoin are responsible for the retardation of rancidity.

HISTORICAL REVIEW.

Constituents of Siam Benzoin.—Benzoic acid was obtained by the destructive distillation of benzoin as early as 1556 (5). The acids of benzoin were studied by Kolbe and Lautemann (6) and by Lowe (7); the latter showed that at least some of the benzoic acid was present in the free state. Curtiss (8) obtained a higher yield of benzoic acid by sublimation than by extraction. Schlickum (9) attempted to separate the constituents of benzoin and Moody (10) reported the presence of cinnamic acid in benzoin.

In 1893, Fritz Ludy, under the direction of A. Tschirch, made the first thorough investigation of the constituents of Siam benzoin (11). Ludy found that Siam benzoin consisted mainly of a mixture of benzoic acid esters of two alcohols, benzoresinol and siaresinotannol. Benzoresinol, $C_{16}H_{28}O_2$, was a white crystalline substance, melting at 272–274° C.; several derivatives were prepared. Siaresinotannol, $C_{12}H_{14}O_3$, was a brown, amorphous substance. Ludy isolated the mixture of the two esters by repeated precipitation of an ethereal solution with petroleum ether, re-

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* Scientific Section, A. PH. A., Madison meeting, 1933.

[1] This paper is based on a thesis presented to the Graduate Council of the University of Florida by Donald E. Riley, in partial fulfilment of the requirements for the degree of Master of Science in Pharmacy.

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[3] Holder of a University of Florida Graduate Scholarship, 1932–1933.

moving the last traces of free benzoic acid with 0.1% NaOH solution. This produced a light yellow, resin-like, transparent, brittle, odorless and tasteless mass melting at 65° C. Upon saponification with KOH, it yielded 38.2% benzoic acid, 56.7% siaresinotannol and 5.1% benzoresinol. Besides this resin mixture, Ludy found that Siam benzoin contained 0.15% vanillin, some free benzoic acid and 0.3% of an oily, aromatic, neutral liquid which proved to be an ester of benzoic acid; the alcohol of the ester was thought to be possibly cinnamyl or benzyl alcohol, but owing to the small quantity was not definitely identified.

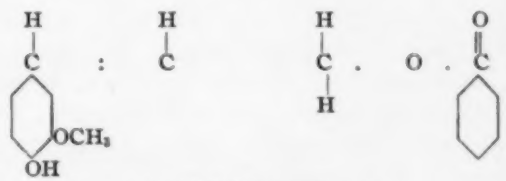
In the same year, an article by J. Salkind (12) contained statements that in Siam benzoin the benzoic acid is present as the ester of benzoresinol and resinotannol, with a small quantity free, that vanillin was present and that cinnamic acid and benzyl benzoate could not be detected.

Cocking and Kettle (13) reported on the analytical characteristics of benzoin.

Our present knowledge of the constituents of Siam benzoin is based largely on the investigations carried out by Friedrich Reinitzer (14). He stated that Siam benzoin in the form of tears is entirely crystalline, melting at 59° C., and that upon warming to 40–50° C., its color changes to yellowish red and it finally becomes brown and amorphous due to oxidation.

Reinitzer concluded that in its pure state, Siam benzoin consists mainly of crystalline coniferyl benzoate mixed with some free siaresinolic acid and benzoic acid and a small proportion of cinnamyl benzoate. On standing in presence of air, the coniferyl benzoate tends to change to the brown amorphous form, probably with some oxidation and polymerization, the change being hastened by heat and light. Traces of vanillin appear in older samples of benzoin.

Coniferyl benzoate, $C_{17}H_{16}O_4$, was obtained in colorless, monoclinic crystals, m. p. 72.8° C., best preserved in the dark at a low temperature in absence of air, to prevent change into the brown amorphous form. This compound was called lubanol benzoate at first, but later lubanol was found to be identical with coniferyl alcohol. According to Zinke and Dzrimal (15) coniferyl alcohol is identical with guaiacresinol, laricresinol and pinoresinol, and the structure of coniferyl benzoate is as follows:



Coniferyl benzoate.

Siaresinolic acid was obtained in crystals, m. p. 279° C.; it was not affected by oxygen and did not turn brown. Zinke and Lieb (16) reported a m. p. of 280–281.5° C. for siaresinolic acid, and found the formula to be $C_{30}H_{48}O_2.COOH$.

The composition of Siam benzoin was reported by Reinitzer as follows:

Constituent.	Fresh Resin.	Old Resin.
Crystalline coniferyl benzoate	77.8%	67.8%
Amorphous coniferyl benzoate	..	10.0
Free benzoic acid	11.7	11.7
Siaresinolic acid	6.0	6.0
Cinnamyl benzoate	2.3	..
Cinnamyl benzoate and vanillin	..	0.3
Water	2.2	2.2
"Geweberste"	..	2.0
	100.0%	100.0%

The amorphous coniferyl benzoate is present in varying amounts, depending on the age and conditions of storage of the resin.

Tests for Rancidity.—The first step in the development of rancidity is the addition of a molecule of oxygen at the double bond of an unsaturated fatty acid, forming a peroxide. In the second

step, the fat is oxidized by the peroxide, forming aldehydes, ketones and other compounds responsible for the characteristic odor and taste of rancid fats (17). Some of the tests for rancidity are based on detection or determination of the peroxides formed in the first step, while others involve the aldehydes, ketones, etc., formed in the second step.

EXPERIMENTAL PART.

Method of Determining Rancidity.—It has long been known that rancid fats liberate iodine from potassium iodide. Since the amount of iodine liberated from KI by a rancid fat gives a measure of the peroxides present in the fat, this principle has been used as the basis of a quantitative determination of incipient rancidity. A number of methods are available based on this principle, differing only in details. Four such methods were tried, including those of Szahlender (18), Wheeler (19), Caldwell and Dye (20) and Taffel and Revis (21); in our hands Wheeler's method appeared to give somewhat more consistent results than the others and hence it was used in the experiments which follow. Wheeler's method is as follows:

From 3 to 10 Gm. of oil is dissolved in 50 cc. of a mixture of 60% glacial acetic acid and 40% chloroform and 1 cc. of saturated solution of KI is added. The mixture is stirred by a rotary motion of the flask and after 1 minute 100 cc. of water is added and the liberated iodine titrated with 0.1*N* or 0.01*N* sodium thiosulphate, using starch as indicator.

In the data which follow, rancidity is reported in terms of the number of cc. of 0.01*N* sodium thiosulphate solution required to decolorize the iodine liberated from KI by 1 Gm. of the fat; this value has been designated as the "degree of rancidity" by Szahlender (18) and this expression is used in the present report.

A substance might interfere with the test used by liberating iodine, preventing the liberation of iodine or absorbing it after it was set free. This possibility was eliminated, each substance being tested by adding it to lard of known degree of rancidity and analyzing the mixture as usual.

Effect of Varying Percentages of Benzoin.—Deschamps originally used 40 Gm. of benzoin per Kg. of lard. The B. P., the British Pharmaceutical Codex and the French Codex specify 30 Gm. of benzoin per Kg., while the U. S. P. amount is 10 Gm. per Kg. Hence experiments were conducted, using varying proportions of benzoin, incorporated by the U. S. P. method, with the exception that closed vessels were used.

TABLE I.—EFFECT OF VARYING PERCENTAGES OF BENZOIN ON THE RATE OF DEVELOPMENT OF RANCIDITY OF LARD. SAMPLES STORED IN AN OVEN AT 50° C.

Percentage of Benzoin.	Degree of Rancidity after				
	0 Days.	1 Day.	4 Days.	12 Days.	27 Days.
0.00	0.18	0.53	9.46	29.40	29.98
0.25	0.18	0.31	0.67	1.15	1.82
1.00	0.17	0.26	0.47	0.95	1.13
2.00	0.17	0.20	0.42	0.84	0.98
5.00	0.17	0.19	0.41	0.76	0.82

The results in Table I illustrate the definite preservative effect of Siam benzoin and indicate that with increasing quantities of benzoin lard becomes increasingly stable toward autoxidation, although the use of 2% and 5% of benzoin does not

show much advantage over 1%, which is the U. S. P. proportion. Some experiments using 3% benzoin likewise showed that this proportion has practically no advantage over 1%. Results similar to those shown in Table I were obtained in repetitions of the experiment, the samples in some cases being stored in diffused light at room temperature. The samples were stored in colorless glass ointment jars. More rapid results were obtained in the 50° C. oven, the development of rancidity being about 10 or 15 times as rapid as at room temperature.

Preservative Effect of Volatile and Non-Volatile Portions of Siam Benzoin.—Tests were carried out to determine whether or not the volatile constituents of benzoin are responsible for the preservative action on lard. Powdered Siam benzoin was sprinkled on glass wool in a round bottom flask placed in an oil-bath, and purified hydrogen passed in through a tube leading to the bottom of the flask; the hydrogen after passing from this flask was bubbled through lard contained in a large test-tube, which was also placed in the bath. The purpose of the hydrogen was to facilitate the passage of vapors from the benzoin into the lard. A blank determination was conducted with all conditions the same, with the exception that no benzoin was used. The operation was carried out in several steps, using fresh lard each time. The oil-bath was first held at 60° C. for two hours, and then at 90° C., 120° C. and 150° C. for two-hour periods in each case. After the 150° C. period, the bath was allowed to cool to 60° C. and the residue in the flask used to benzoinate a portion of lard. From the results of this experiment, it appeared that the preservative constituents of the benzoin remained in the portion non-volatile at 150° C., since this was the only fraction showing any preservative effect.

The experiment was repeated, with the lard kept in a separate bath at 50° C., thus eliminating overheating of the lard and reducing the likelihood of volatile constituents passing on through the lard instead of being absorbed. The bath containing the benzoin was heated for two-hour periods at 60°, 90°, 120°, 150° and 200° C., and the residue used for benzoinating a portion of lard as before. The results verified the previous conclusion that the preservative constituents were non-volatile at 150° C., but in this case the residue remaining after 200° showed no appreciable preservative effect, nor was such an effect noticeable in the fraction volatile at 200°. It seems likely that the benzoin decomposed at 200°, as the residue was quite dark in color; in this connection Reinitzer reported that benzoin gave up benzoic acid when heated to 120–140° C., and if heated more strongly, gave odors of eugenol and finally of guaiacol.

Since the results of both tests indicated that the preservative constituents were non-volatile at 150° C., attention was next devoted to methods of isolation of the non-volatile constituents of Siam benzoin.

Isolation of Constituents of Benzoin.—The coniferyl benzoate was isolated by a method recommended by Reinitzer (14). Large tears of benzoin, as free as possible from the brown crust, were washed with enough ether (chilled to 5° C.) to partially cover the benzoin. The mixture was frequently shaken and carefully observed. When the tears began to appear white, the ether was poured off, this treatment serving to remove the brown crust. The residue was dissolved in ether at room temperature, filtered, and petroleum ether added until the solution became turbid. Then the flask was loosely stoppered and set aside at 0° C. to crystallize. After 12 to 20 hours, crystals were obtained, usually melting at 65° to 68° C. Upon repeated recrystallization in the same manner, the coniferyl benzoate was obtained in crystals of m. p. 72.2° C. (corr.), as compared with the m. p. of 72.8° C. reported by Reinitzer. To obtain such a product, eight to twelve recrystallizations are required. For the preliminary work, the substance was recrystallized four or five times, and a product melting at 69° to 70° C. was obtained. For the final experiments, the product of highest purity was used.

The siaresinolic acid was separated and purified by one of the methods given by Reinitzer. A mixture of benzoin and 70% acetic acid was allowed to stand, with occasional shaking, until the pieces of resin had disappeared, leaving a layer of light yellow material in the bottom of the flask. After filtration, the residue was washed with 70% acetic acid and then with water; the crystalline mass was then dissolved in hot alcohol and water added until the solution showed a slight turbidity, the mixture then being set aside to crystallize. By this method, crystals melting from 263.3° to 265.5° C. (corr.) were obtained. Repeated recrystallization from alcohol gave a

product melting at 268.9° to 270.0° C. (corr.). Neither of these crystalline products showed the presence of coniferyl benzoate by use of the ferric chloride color test.

Cinnamyl benzoate was prepared by treating cinnamyl alcohol with benzoyl chloride.

Effect of Constituents of Siam Benzoin on Rate of Development of Rancidity of Lard.—In testing the effect of the various constituents of Siam benzoin, they were added to lard in the proportions that would be present in benzoinating lard by the U. S. P. method on the basis of the analysis of Reinitzer. Thus the amount of crystalline coniferyl benzoate used in the lard was 77.8% of the amount of Siam benzoin that would be used in the U. S. P. method, and the corresponding proportions were 6% for siaresinolic acid and 4% for cinnamyl benzoate (the latter being greater than would be present in the U. S. P. amount of benzoin). Cinnamyl benzoate was tested in the proportion of 1%, as it was thought that the sample of cinnamyl benzoate used probably contained some unchanged cinnamyl alcohol. The results are given in Tables II and III.

TABLE II.—EFFECT OF CONSTITUENTS OF BENZOIN ON THE RATE OF DEVELOPMENT OF RANCIDITY OF LARD. SAMPLES STORED IN AN OVEN AT 50° C.

Added Substance.	Degree of Rancidity after				
	1 Day.	6 Days.	14 Days.	35 Days.	70 Days.
None	0.36	2.08	6.50	13.20	14.85
Siaresinolic acid	0.34	1.97	6.02	10.93	12.55
Vanillin*	0.37	1.59	5.50	9.31	10.82
Coniferyl benzoate	0.35	0.59	0.76	1.46	1.55
Benzoin	0.38	0.64	0.80	1.44	1.51

* Added in proportion of 0.1%.

TABLE III.—EFFECT OF VARIOUS SUBSTANCES ON THE RATE OF DEVELOPMENT OF RANCIDITY OF LARD. SAMPLES STORED IN AN OVEN AT 50° C.

Added Substance.	Degree of Rancidity after				
	4 Days.	10 Days.	21 Days.	35 Days.	42 Days.
None	0.41	1.85	2.70	8.25	14.10
Cinnamyl benzoate	1.12	1.91	2.80	6.32	13.02
Cinnamyl alcohol	1.91	2.02	2.24	6.05	12.97
Benzoic acid*	0.45	1.55	2.52	7.77	13.85
Benzoin	0.26	0.61	0.77	0.83	0.96

* 0.1 Gm. used in 50 Gm. lard.

The results indicate that coniferyl benzoate is the ingredient of Siam benzoin responsible for the preservative action on lard. Siaresinolic acid has practically no preservative effect. Vanillin gives some protection when present to the extent of 0.1%, but this proportion is higher than could be obtained from the U. S. P. amount of Siam benzoin. Cinnamyl benzoate showed no effect when used in the quantity that would be present in the U. S. P. amount of Siam benzoin and further tests showed that it was likewise ineffective when more than 25 times this proportion was used. Cinnamyl alcohol had no effect. The results with benzoic acid verified the previous report of Husa and Husa (3) that this compound has no effect on the development of rancidity in lard.

It had previously been found by Husa and Husa (3) that Siam benzoin gives a pronounced red color in the Kreis test for rancidity. In the present study, it was

found that coniferyl benzoate and vanillin similarly interfered with the use of the Kreis test. However, since siaresinolic acid gave no color with the Kreis reagent, the Kreis test was used in following the rancidity of lard alone and lard containing siaresinolic acid. The results fully confirmed the lack of preservative effect on the part of siaresinolic acid.

As a further check on the results, observations were made as to the color changes in samples of ointment of potassium iodide, using the methods described by Husa (4). The results verified the previous conclusions as to the effects of coniferyl benzoate, siaresinolic acid and vanillin.

The results with coniferyl benzoate, siaresinolic acid, benzoic acid and benzoin were also confirmed by the von Fellenberg (22) test for rancidity, this being a color test based on reaction of a fuchsin-sulphurous acid reagent with the aldehydes of the rancid fat.

Following the regular procedure using Wheeler's test, it was found that Siam benzoin which had been stored for three months in an oven at 50° C., during which time it had turned to a reddish brown color, showed very inferior preservative power as compared with U. S. P. benzoin.

Since Siam benzoin does not dissolve completely in lard in the U. S. P. benzoination process, it was of interest to observe the solubility in lard of the various constituents of benzoin. In the proportions designated in the experiments, coniferyl benzoate and vanillin dissolved completely, while siaresinolic acid dissolved only partially.

It has generally been found that negative catalysts of oxidation are themselves susceptible to oxidation; the lack of stability of coniferyl benzoate in air is thus in accord with the general rule.

CONCLUSIONS.

The constituent of Siam benzoin responsible for the preservative effect on lard is coniferyl benzoate. Vanillin gives some retardation of the development of rancidity when present to the extent of 0.1%, but this proportion is higher than could be obtained from the U. S. P. proportion of benzoin. The other constituents of Siam benzoin, *i. e.*, siaresinolic acid, benzoic acid and cinnamyl benzoate, do not exert a preservative effect on lard.

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A COMPARATIVE STUDY OF MARYLAND SENNAS.*[1]

BY FRANK J. SLAMA.

I. INTRODUCTION.

The Maryland sennas, with the exception of *Cassia Medsgeri*, were studied by botanists as far back as the seventeenth century. At that time, Tournefort (1656–1708) placed them in the tribe *Cassia* and later Linné, in his Species Plantarum left this classification unchanged. Willdenow, in his work, also accepted the classification of his predecessors. However, in recent years botanists have questioned this classification and have divided the Maryland sennas into two Groups—*Cassia*, which includes *Cassia Marilandica* and *Cassia Medsgeri;* and *Chamæcrista*, which includes *Cassia nictitans* and *Cassia Chamæcrista*. As a result, various papers have been written for and against the separation of the Maryland sennas but up to the present time, no definite conclusions have been reached.

Most of the work attempting to decide the question has been carried out only upon the flowers and pods. In this paper the leaflets of the Maryland sennas are studied and from their study it appears that results are obtained which will be of value in deciding this question. As the study progressed, it became evident that the leaflets of the Maryland sennas possessed characteristics differing greatly from those of the official senna leaflets and it was decided best to include their study with that of the Maryland sennas.

The leaflets of six sennas, therefore, were studied, the two official sennas, those of *Cassia Senna* and *C. angustifolia*, and those of the four Maryland sennas, namely, *C. Marilandica, C. Medsgeri, C. nictitans* and *C. Chamæcrista*. The official senna leaflets were obtained from stock while the Maryland sennas were obtained in the vicinity of Baltimore, Md.; *C. Marilandica* being found at Owings Mills, Md., and

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* Scientific Section, A. PH. A., Madison meeting, 1933.

[1] From the laboratory of Charles C. Plitt, Professor of Botany and Pharmacognosy, School of Pharmacy, University of Maryland. Thesis submitted to the Faculty of the Graduate School of the University of Maryland in partial fulfilment of the requirements for the degree of Master of Science.

on the Hillen Road; *C. nictitans*, on Gwynn Falls Driveway and in Brooklyn, Md.; while *C. Chamæcrista* was gathered at Garland, Rosedale and Essex, Md. *C. Medsgeri* which is rarely found in the neighborhood of Baltimore was discovered (1) at a point east of Carney, Md.

II. Descriptive Studies.

a. Macroscopic.

1. Average Sizes of Leaflets.—The Maryland senna leaflets were pressed immediately after collecting and within an hour they were measured. The average sizes are as follows: *C. Marilandica*, 42.68 mm. by 15.48 mm., *C. Medsgeri*, 35.15 mm. by 13.25 mm., *C. nictitans*, 8.45 mm. by 2.25 mm. and *C. Chamæcrista*, 10.75 mm. by 3.25 mm.

The official senna leaflets were taken from stock and their average sizes are *C. angustifolia*, 26 mm. by 7.85 mm., *C. Senna*, 22.6 mm. by 8.1 mm.

2. Venations.—Examining the venation of the leaflets, it is readily seen that the venation occurring in *Cassia nictitans* and *C. Chamæcrista* differs greatly from that of the four remaining species. In these two sennas the midrib is closer to one margin and consequently it divides the leaflets into two unequal parts, the larger showing the veins more numerous and longer and usually with three veins originating at the petiolule. The average leaflet of the official sennas, *C. Marilandica* or *C. Medsgeri*, has the midrib running practically through the center of the leaflet and veins on each side of the midrib similar in size and number. Furthermore, the veins in the leaflets of *C. nictitans* and *C. Chamæcrista* are seen extending very close to the margins without any apparent division into veinlets; whereas the four remaining senna leaflets show the terminal branches of the veinlets anastomosing near the margins. This effect, which is seen more clearly in *C. Marilandica* and *C. Medsgeri*, is also characteristic of the leaflets of the official sennas. This peculiar effect is never found in either *C. nictitans* or *C. Chamæcrista*.

3. Other Observations.—(*a*) *C. Marilandica* and *C. Medsgeri* are perennials; *C. nictitans and C. Chamæcrista* are annuals. Their seeds are found germinating during first week of May, about the same time shoots of *C. Marilandica* and *C. Medsgeri* are seen sprouting from underground rootstocks. The official sennas are shrubs.

(*b*) The Maryland sennas behave rather uniformly also in the fall of the year. About October 1st, they begin to disappear, the annuals dying to the ground and the perennials losing their leaves. Within two or three weeks, they have practically disappeared.

b. Microscopic.

1. A Study of the Stomata.—The epidermis after removal is dehydrated by passing it through, and allowing it to stay from half to one hour in each of the following alcohols—35%, 50%, 70%, 85%, 95% and absolute alcohol in the order given. Before passing the epidermis from 50% to 70% alcohol, the specimen is stained for five minutes in Delafield's hæmatoxylin and then washed in 50% alcohol. From absolute alcohol it is passed into oil of clove where it remains for ten minutes. It is then mounted in Canada balsam.

Study of the Upper Surfaces of the Leaflets.—All the stomata were examined under a magnification of 450 diameters. Figures 1, 2 and 3 show the upper epidermis of *C. Marilandica*, *C. Medsgeri* and *C. nictitans*, respectively. Superficial examination shows them free of stomata, as in the figures; closer study shows, however, that some stomata may be present, thus *C. Marilandica* and *C. Medsgeri* may have stomata occasionally only along the midrib whereas in *C. nictitans*, stomata may be found along the midrib, at the base and apex and near the margins, the number along the midrib increasing from the base to the apex. However, if the epidermis of that portion of the leaflet, a short distance within the margin and from the midrib, is examined, stomata are practically absent.

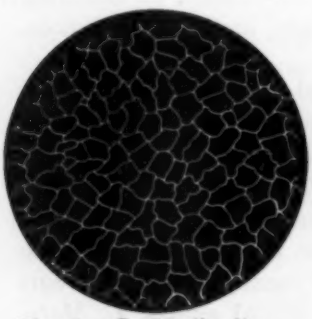

Fig. 1.—*C. Marilandica*—Upper epidermis.

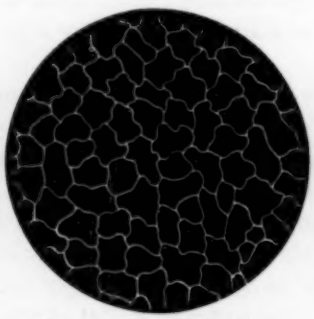

Fig. 2.—*C. Medsgeri*—Upper epidermis.

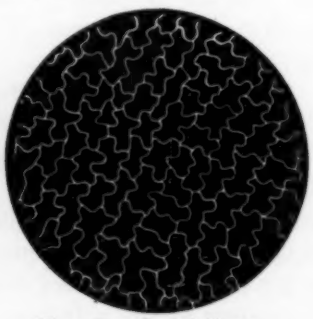

Fig. 3.—*C. nictitans*—Upper epidermis.

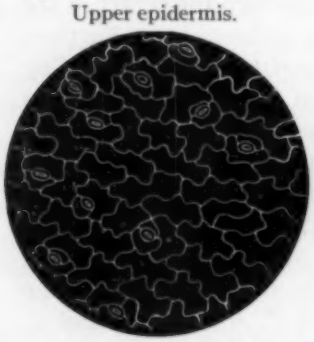

Fig. 4.—*C. Chamæcrista*—Upper epidermis.

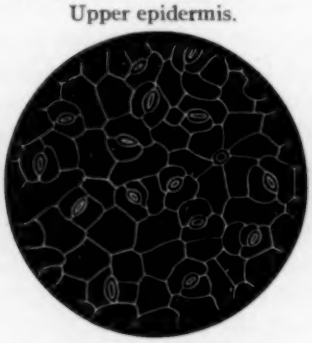

Fig. 5.—*C. Senna*—Upper epidermis.

Fig. 6.—*C. angustifolia*—Upper epidermis.

A study of the upper epidermis of the other three species of *Cassia*, *C. Chamæcrista* (Fig. 4), *C. Senna* (Fig. 5), *C. angustifolia* (Fig. 6), reveals that all three are provided with stomata. In *C. Chamæcrista* they are distributed uniformly, whereas in the remaining two, they are not, there being in each fewer stomata along the margin.

Characteristic of the stomata of the upper epidermis of *C. Senna* and *C. angustifolia* (Fig. 6) is the occasional touching of the guard cells of two adjacent stomata. More frequent is the separation of two stomata only by their neighboring cells. The upper epidermises of the Maryland sennas studied never have the guard cells of two stomata touching. *C. Chamæcrista* frequently shows the neighboring cells separated by one epidermal cell, whereas in *C. nictitans*, the neighboring cells are rarely separated by one epidermal cell but by two or more, usually many.

Study of the Lower Surfaces of the Leaflets.—The stomata on the lower epidermis

of the six sennas examined are more uniformly distributed, although their number may decrease along the margins. Figures 7 to 12, inclusive, show the lower epidermises of the sennas and it is readily seen that the stomata of the official sennas, upon the whole, are the largest. The stomata of *C. nictitans* and *C. Chamæcrista* often are situated not in the center of the two neighboring cells, but pulled toward one neighboring cell, making that cell much smaller than the other. This condition also occurs in the official sennas and in *C. Marilandica* and *C. Medsgeri* but to a lesser degree. However, with *C. nictitans* and *C. Chamæcrista* this is markedly so and aids in their identification. *C. nictitans* has stomata which are smaller than those of *C. Chamæcrista*, there is a greater number per square mm. and the stomata of the former are nearly spherical in outline while those of the latter are elliptical.

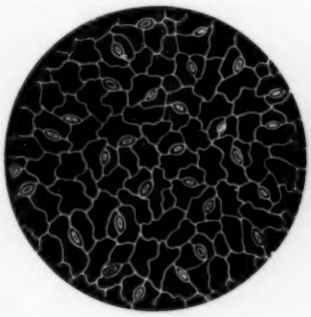

Fig. 7.—*C. Marilandica*—Lower epidermis.

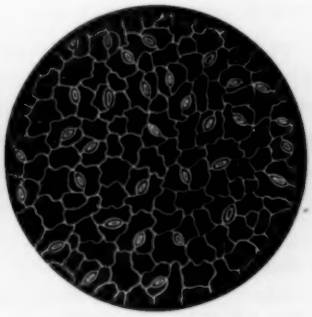

Fig. 8.—*C. Medsgeri*—Lower epidermis.

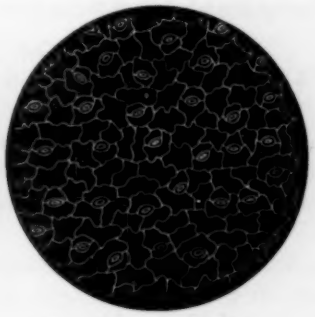

Fig. 9.—*C. nictitans*—Lower epidermis.

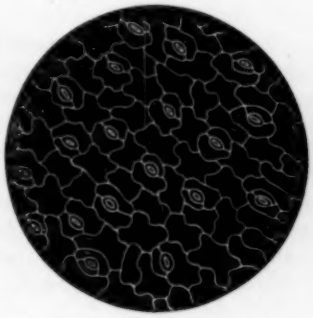

Fig. 10.—*C. Chamæcrista*—Lower epidermis.

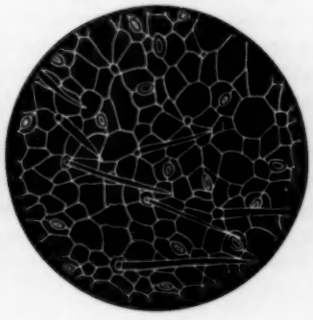

Fig. 11.—*C. Senna*—Lower epidermis.

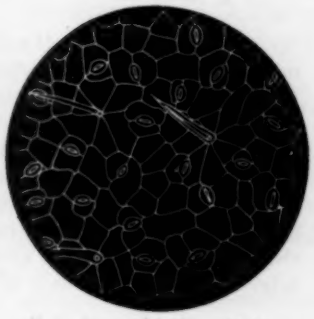

Fig. 12.—*C. angustifolia*—Lower epidermis.

Table I gives the results of the study of the stomata found on the upper and lower surfaces of the official sennas and of the Maryland sennas.

TABLE I.—STOMATA OF THE OFFICIAL SENNAS AND OF THE MARYLAND SENNAS.

Plant.	Stomata per Sq. Mm., U. E.	Stomata per Sq. Mm., L. E.	Average Size Stomata (Microns), U. E.	Average Size Stomata (Microns), L. E.	Ratio of Shorter Diameter to Larger, U. E.	Ratio of Shorter Diameter to Larger, L. E.
Alexandria Senna	189.4	215.1	21.73 × 28.68	20.16 × 26.73	0.758 to 1	0.754 to 1
India Senna	203.5	266.4	21.95 × 29.92	18.76 × 26.81	0.73 to 1	0.7 to 1
Cassia Marilandica	...	349.9	.....	22.08 × 28.46	.....	0.776 to 1
Cassia Medsgeri	...	250.5	.....	17.15 × 21.98	.....	0.78 to 1
Cassia Chamæcrista	143	219.7	13.89 × 20.56	16.53 × 23.51	0.68 to 1	0.703 to 1
Cassia nictitans	?	358.0	13.06 × 16.77	14.23 × 19.2	0.78 to 1	0.742 to 1

In the first column for *C. nictitans*, a question mark is placed. Whether this space should be left blank or filled in, depends entirely upon the portion of the leaflet examined. If the upper epidermis is examined close to the margins or along the midrib, and as along these areas, stomata are found, this space should be filled. However, in order to give the approximate average size of the stomata on the upper epidermis, ten were examined and the results were included in Table I.

The table shows (1) the stomata of the upper and lower epidermis of Alexandria Senna are approximately the same size; (2) the stomata on the lower epidermis of India Senna are somewhat smaller than those of the upper epidermis; (3) the difference in the sizes of the stomata of the official sennas could hardly be used as a means of separating them under the microscope; (4) *C. Marilandica* and *C. Medsgeri* have no stomata upon the upper surfaces unless the area near the midrib is examined and there they are found occasionally; (5) with *C. Chamæcrista* stomata are found on both surfaces of the leaflet, the stomata on the upper surface being the smaller; (6) *C. nictitans* has stomata uniformly distributed on the lower epidermis only; (7) the stomata of *C. Chamæcrista* are larger than the stomata of *C. nictitans* and (8) the stomata of the official sennas, upon the whole, are the largest studied.

2. Neighboring Cells.—The results of a study of the neighboring cells of the sennas are shown in Table II.

TABLE II.—NEIGHBORING CELLS.

Plant.	No. Stomata Examined.	Stomata (2 N. C.).	Stomata (3 N. C.).	Stomata (4 N. C.).	Stomata (5 N. C.).
Cassia Senna	150	144	6	..	...
C. angustifolia	150	129	17	4	...
C. Marilandica	300	203	65	28	4
C. Medsgeri	315	291	14	7	3
C. Chamæcrista	220 (U. E.)	220	..	..	...
	310 (L. E.)	310	..	..	...
C. nictitans	425	357	62	6	...

This table shows (1) that stomata with two neighboring cells predominate; (2) making use of the possibility of five neighboring cells we can readily divide the above sennas into three groups, the official sennas without five neighboring cells, two Maryland sennas with five neighboring cells and two Maryland sennas without five neighboring cells; (3) furthermore, each of the three main groups may be separated into its two components, thus *C. angustifolia* is readily separated from *C. Senna* as the former exhibits a greater number of stomata with three neighboring cells and it is the only official senna having stomata with four neighboring cells; stomata with three neighboring cells and four neighboring cells occur to a greater degree in *C. Marilandica* than in *C. Medsgeri;* and *C. Chamæcrista* always shows its stomata accompanied by only two neighboring cells while in *C. nictitans* stomata with three and four neighboring cells are present.

3. Epidermal Cells.—Attempt was made to separate the sennas by means of a study of their epidermal cells. It was noted that the thickness of the cell wall is of no value as approximately the same thickness of cell wall exists in each senna and that the epidermal cells vary in shape to such an extent as to make the measuring of the cells of no value, nevertheless, the epidermal cells, like the neighboring cells, have characteristics which are of value in separating the sennas into three groups.

Because of the trichomes on the epidermis, the official sennas have certain epidermal cells that are very characteristic. The base of each hair is surrounded by four to nine epidermal cells similar to the spokes of a wheel so that the portion of each cell adjacent to the base of the hair is more narrow than that at the opposite side. Usually, six epidermal cells accompany a hair in each of the official sennas; and with both sennas, variability in the shape of these cells occurs.

The other epidermal cells are of various shapes, but the outline of each is made up of straight lines, or lines that are just slightly curved.

Maryland sennas show hairs to be absent and, as a result, the characteristic epidermal cells that are present in the official sennas, are absent.

The epidermal cells of *C. Medsgeri* and *C. Marilandica* are more undulate on the lower epidermis and are practically the same size as the largest neighboring cell. The epidermal cells of *C. Marilandica* are approximately the same size as those of *C. Medsgeri* but those of *C. Marilandica* tend to be square-like while those of *C. Medsgeri* are very undulate. Now, just as in the case of their neighboring cells, certain ones of *C. Medsgeri* may look like those of *C. Marilandica* and certain ones of *C. Marilandica* look like those of *C. Medsgeri*, so the epidermal cells of *C. Marilandica* may sometimes become undulate while those of *C. Medsgeri* appear square-like; but an examination of the center portion of the leaflets will show the typical cells of each species.

In comparing *C. nictitans* and *C. Chamæcrista*, the former shows the outline of the epidermal cells to be more undulate and its epidermal cells are on an average, slightly larger than the average neighboring cells; while *C. Chamæcrista* exhibits epidermal cells which are much larger than the average neighboring cells. In both cases, the epidermal cells found on the upper epidermis are slightly larger than those on the lower.

4. *Epidermal Hairs.*—On the upper and lower epidermis of *C. Marilandica*, *C. Medsgeri*, *C. Chamæcrista* and *C. nictitans*, hairs are absent whereas with the official sennas, hairs are present on both surfaces. The apices and the midribs of the leaflets of the Maryland sennas also were examined for hairs with the following results. Occasionally hairs are present on the tips of *C. Marilandica* and *C. Medsgeri* leaflets and rarely, also on the midrib; but hairs are not found either on the apices or midribs of leaflets of *C. nictitans* and *C. Chamæcrista*.

The arrangement of the epidermal cells around the hairs of the official sennas is already mentioned. These arrangements were studied and the number of arrangements occurring on each epidermis was counted to ascertain if there was enough variation in them to be of value in identifying the official sennas. As the hairs are more numerous on the lower surface of *C. Senna* leaflets, more arrangements should be found here, and this proved to be true.

For simplicity, each arrangement will be called an epidermal hair apparatus and will be designated by the abbreviation E. H. A. This abbreviation when used will always represent the four to nine epidermal cells which arrange themselves in a circular fashion around the base of any hair. The following table shows the distribution of hairs.

TABLE III.—DISTRIBUTION OF HAIRS.

Plant.	Epidermis Examined.	Av. No. E. H. A. in a Field.	Average Size of Hairs.	Size of Largest Hair.
India Senna	Upper	0.06	105.0 microns long	188.4 microns long
	Lower	1.83	13.9 microns in dia.	19.3 microns in dia.
Alex. Senna	Upper	1.72	114.0 microns long	216.0 microns long
	Lower	12.10	12.5 microns in dia.	16.6 microns in dia.

NOTE: In each case, 50 fields were examined.

From the results obtained, it is readily seen that, by means of the E. H. A.'s the upper epidermis of *C. angustifolia* can be distinguished from that of *C. Senna* and the same holds especially true for the lower surfaces of these two official sennas. But it would be more difficult to distinguish the upper epidermis of *C. Senna* from the lower of *C. angustifolia*, the average of the E. H. A.'s of the former being 1.72 and of the latter 1.83. Here the E. H. A.'s are of no help and another method for their separation must be applied. Under the heading of neighboring cells, it was concluded that stomata with three neighboring cells are found more often in *C. angustifolia* and stomata with four are rarely found in *C. Senna*. If this method is applied, the upper epidermis of *C. angustifolia* is recognized as it shows stomata with three neighboring cells to be present more often and occasionally a stoma with four, the absence of which would determine the lower epidermis of *C. Senna*.

Hairs are found along the midrib, upon both epidermal surfaces of *C. angustifolia*, being more numerous upon the lower surface. Upon both surfaces the number of hairs increase as one passes from apex to the base of the leaflet. The distribution of hairs on *C. Senna* is the same as on *C. angustifolia*, except that they are far more numerous, exceeding the number found there, vastly.

The apices of one hundred leaflets of each of the two official sennas were examined. *C. Senna* usually shows hairs present, the number varying from one to many; occasionally, however, an apex without a single hair is observed. *C. angustifolia* usually shows apices without hairs, but occasionally an apex with hairs is noted.

5. Margins.—The margins of the senna leaflets were studied and the sennas with similar margins were grouped together, three groups being formed; the official sennas, *C. angustifolia* and *C. Senna* form one, *C. Marilandica* and *C. Medsgeri* another and *C. nictitans* and *C. Chamæcrista* the third, the following table making this clear.

TABLE IV.—COMPARISON OF MARGINS.

Plants.	Size of Largest Hair.	Remarks.
Alex. Senna	.....	The larger hairs appear on margins of India Senna. In both sennas, hairs are usually found with long diameters almost parallel to the margin and their tips pointing toward the apex. Hairs are found at very irregular intervals.
India Senna	52.25 microns long 23.5 microns in dia.	
C. Marilandica	933 microns long 24 microns in dia.	The margins of these leaflets show large hairs. *C. Medsgeri* usually exhibits hairs parallel to the margin and tips of hairs touching the margin. With *C. Marilandica*, hairs usually occur almost perpendicular to the margin.
C. Medsgeri	587 microns long 27 microns in dia.	
C. Chamæcrista	Hairs are absent Serrated margins	In *C. Chamæcrista* the serrations extend from the base to the apex on both margins. *C. nictitans* shows one margin completely serrated and the other serrated about $^1/_5$ of the distance from the base to the apex.
C. nictitans	Hairs are absent Serrated margins	

To summarize, the official sennas have margins of leaflets almost free of hairs, only occasionally is a small hair found; the margins of leaflets of *C. Medsgeri* and *C. Marilandica* have large hairs; and the margins of the leaflets of *C. Chamæcrista*

and *C. nictitans* are more or less serrated, those of the former being serrated along both margins, whereas in *C. nictitans*, one margin alone is completely serrated and the other is serrated only about one-fifth of the way from the base to the apex.

6. *Apices.*—The results of a study of the apices of the senna leaflets studied are shown in Table V.

TABLE V.—A COMPARISON OF APICES.

Plant.	Av. Size Tip.	Remarks.
C. angustifolia	261 microns long 250 microns wide	The apices are about as long as wide and are either conical or ball-shape. *C. Senna* usually shows apices with hairs present. *C. angustifolia* usually shows apices without hairs.
C. Senna	246 microns long 246 microns wide	
C. Marilandica	584 microns long 211 microns wide	These sennas exhibit apices which are similar but those of *C. Marilandica* are about three times as long as wide. The apices of *C. Medsgeri* are about twice as long as wide. The apices taper slightly.
C. Medsgeri	316 microns long 175 microns wide	
C. Chamæcrista	283 microns long 150 microns wide	The apices of *C. nictitans* are about three times as long as wide and those of *C. Chamæcrista* are about twice as long as wide. The apices taper to a sharp slender point.
C. nictitans	433 microns long 133 microns wide	

The above table shows that it is possible to separate the sennas into the 6 species by the appearance of their apices.

7. *Petiolules.*—It was also found that the sennas could be separated into three groups by means of the petiolules which are classified as large, medium or small.

C. Marilandica and *C. Medsgeri* have the large petiolules, 500 to 750 microns wide and 1250 to 2100 microns long; the official sennas, the medium-sized, 500 to 850 microns wide and 675 to 1100 microns long and with *C. nictitans* and *C. Chamæcrista*, the petiolules are very small. The chart that follows shows the most important characteristics of the petiolules.

Petiolules
- Large
  - Rarely without hairs, hairs numerous—*C. Medsgeri.*
  - Occasionally with hairs, hairs not numerous—*C. Marilandica.*
- Medium
  - Hairs numerous on petiolules and along outlines of petiolules—*C. Senna.*
  - Hairs not numerous on petiolules and along outlines of petiolules—*C. angustifolia.*
- Small
  - *C. nictitans* or *C. Chamæcrista.*

8. *Glands.*—The petioles of the sennas were examined for the presence of glands. Numerous petioles of the official sennas were obtained from stock and in every case, no glands were seen.

On the petioles of the Maryland sennas glands are always present. Those of *C. Marilandica* and *C. Medsgeri* have conical glands while *C. nictitans* and *C. Chamæcrista* show cup-shaped glands beneath the lowest pair of leaflets. The latter plant possesses the larger cup-shaped glands. A comparison of the glands is shown in Table VI.

TABLE VI.—A COMPARISON OF GLANDS.

Plant.	Glands on Petioles.	Remarks.
C. Senna	Absent	.....
C. angustifolia	Absent	.....
C. Marilandica	Present	Conical or club-shaped glands.
C. Medsgeri	Present	Conical glands.
C. Chamæcrista	Present	Large cup-shaped glands beneath the lowest pair of leaflets.
C. nictitans	Present	Small cup-shaped glands beneath the lowest pair of leaflets.

9. Cross Section of Leaflets.—In studying the cross sections of the leaflets, the palisade tissue was the determining factor in the separation of the official sennas and the Maryland sennas. The official sennas (2) possess two layers of palisade tissue, one layer near the upper surface and another, near the lower surface of the leaflet. However, all the Maryland sennas show but one layer of palisade tissue which is adjacent to the upper surface.

10. Powdered Senna Leaflets.—All the sennas were examined, according to Sayre's (3) method. A No. 60 powder was made of each senna and to one-half Gm. of the powder in a small homeopathic vial, 6 Gm. of a solution of equal parts of glycerin (sp. gr. 1.25) and water, were added. The official sennas are readily differentiated, as Alexandria senna[1] shows 4.4 hair tips and India senna[2] one hair tip in a field, the low-power objective being used. These results are similar to those obtained by Sayre.

The Maryland sennas may be identified as follows. *C. Marilandica* and *C. Medsgeri* are determined by the shape of their epidermal cells although the number of stomata in the field, their size and the number of neighboring cells can be used to confirm the identification. *C. nictitans* and *C. Chamæcrista* are also recognized by their epidermal cells and by the shape and size of their stomata. The epidermal cells of *C. Chamæcrista* are less undulate and larger than those of *C. nictitans*, while the latter has smaller, nearly spherical stomata in contrast to those of *C. Chamæcrista* which are elliptical and of which there are fewer per field.

A No. 60 powder was used to study the number of tips of hairs in the field, and, for the recognition of the powdered sennas, a No. 20 powder. In every case, the sample of the powdered leaflet was treated with a drop or two of a saturated aqueous solution of chloral hydrate for three to five minutes prior to its examination.

11. Microsublimation was also carried out but the results were not conclusive.

III. COMPARISONS AND CONCLUSIONS.

A comparison of the senna leaflets studied is shown in the following table.

TABLE VII.—A COMPARISON OF SENNAS.

Group I. *C. Senna* and *C. angustifolia.*	Group II. *C. Marilandica* and *C. Medsgeri.*	Group III. *C. Chamæcrista* and *C. nictitans.*
1. Terminal branches of veinlets anastomose near the margins of the leaflets. Effect is less pronounced than that of Group II.	1. Terminal branches of veinlets anastomose near the margins of the leaflets.	1. Terminal branches of veinlets end abruptly near the margins. Veinlets do not anastomose.

[1] *Cassia Senna.*

[2] *Cassia angustifolia.*

2. Largest stomata studied. Occasionally, there are two stomata with their guard cells touching. Stomata are accompanied by characteristic neighboring cells.	2. Stomata are practically absent from the upper surfaces of these leaflets.	2. Both surfaces of these leaflets show stomata present.
3. Hairs are present on both surfaces.	3. Hairs are absent from both surfaces.	3. Hairs are absent from both surfaces.
4. Occasionally, very small hairs are found along the margins.	4. Hairs of large size are present along the margins.	4. Hairs are absent along the margins. Margins are serrated.
5. Two rows of palisade tissue.	5. One row of palisade tissue.	5. One row of palisade tissue.
6. Petioles are devoid of glands.	6. Petioles show the presence of conical or club-shaped glands.	6. Petioles show the presence of cup-shaped glands.
7. Plants are shrubs.	7. Plants are perennial herbs.	7. Plants are annuals.
8. Apices are conical or ball-shape.	8. Apices taper slightly.	8. Apices taper to a sharp, slender point.

CONCLUSIONS.

In conclusion, an examination of the three groups will bring out the following:

(1) That there are three groups, each group being distinct in itself. The resemblance of any group to each of the other two, is merely superficial.

(2) The differences between Group I and the other two are far greater than the differences between these two groups. It would therefore be only logical that, if Group III is separated from *Cassia*, Group I should also be separated from this genus. We would therefore have Group I composed of the official sennas, consisting of *Cassia angustifolia* and *C. Senna* (*C. acutifolia Delile*), considered under a new Genus, *Senna*, and then recognized as *Senna angustifolia* and *S. acutifolia*, Group II composed of *Cassia Marilandica* and *C. Medsgeri* continued under Genus *Cassia* and Group III, composed of *Cassia nictitans*, and *C. Chamæcrista*, under Genus *Chamæcrista* and known as *Chamæcrista nictitans* and *C. fasciculata*, as already recognized by botanists.

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"A Study of the Physical and Chemical Properties of a Number of Specimens of Calomel of American and European Manufacture," by C. H. LaWall and J. W. E. Harrisson.

The authors have made an investigation of fourteen commercial samples of calomel, nine of which are of American manufacture and five of European manufacture.

Especial attention was paid to the physical properties and the microscopic appearance, in the light of the U. S. P. requirement that it should show "only small isolated crystals when viewed under a lens having a magnifying power of one hundred diameters."

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Compiled by A. G. DuMez, Reporter on the Progress of Pharmacy.

All articles in these lists will be presented in abstract form in the bound volumes of the YEAR BOOK, which is issued annually. Those desiring abstracts immediately can obtain them for a fee of one dollar each by communicating with A. G. DuMez, University of Maryland, School of Pharmacy, N. W. cor. Lombard and Greene Sts., Baltimore, Maryland.

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THE SOLUBILITY OF POTASSIUM CHLORIDE IN AQUEOUS POTASSIUM IODIDE SOLUTIONS.*

BY S. E. HARRIS AND W. G. CHRISTIANSEN.

In connection with other studies in progress in this laboratory, it became necessary to determine the effect of varying amounts of potassium chloride on the solubility of potassium iodide in water. The determinations were carried out at 20°, 30° and 40° C., and the results are shown graphically in Fig. 1 and in detail in the experimental part. As was expected, the addition of successively larger quantities of KCl to saturated KI solutions depressed the solubility of each until an equilibrium was reached.

In addition the solubility of KCl in terms of grams of salt per 100 cc. of solution was determined for the same temperatures.

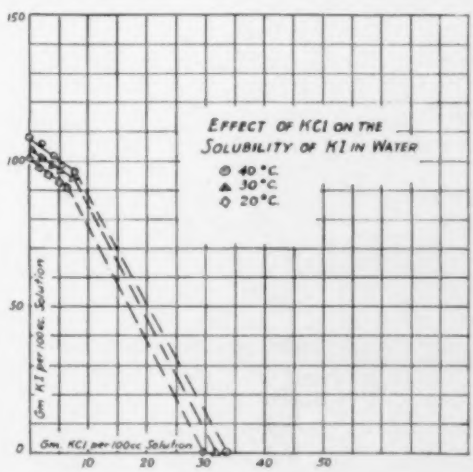

Fig. 1.

* Section on Practical Pharmacy and Dispensing, A. PH. A., Madison meeting, 1933.

EXPERIMENTAL.

The determinations were carried out in the following manner: A saturated solution of pure potassium iodide was prepared at 50° C. and cooled to the desired temperature. The solution was well stirred to prevent supersaturation and the separated salt allowed to settle. Fifty cc. of the clear supernatant liquor was pipetted into a large test-tube by means of a pipette calibrated at the particular temperature and the desired quantity of KCl ground to 80-mesh added. The tube was sealed by a blast lamp and attached to a shaking device in a thermostat maintained at the desired temperature to within ±0.05° C. Shaking was continued for 24 hours, after which the undissolved salt was allowed to settle. Ten-cc. portions were then removed by a calibrated pipette and diluted to 1000 cc. Total halogen was determined in this dilution by Volhard's method and potassium iodide by KIO_3 solution. From these values the composition of the solution in terms of grams of KCl and KI per 100 cc. of solution was calculated.

TABLE I.—KCl–KI–WATER SYSTEM AT 20° C.

Gm. KCl Added per 100 Cc. KI Solution.	Cc. KIO_3 Used.	Cc. N/10 $AgNO_3$ Equivalent to KI from Col. 2.	Gm. KI/100 Cc. Solution.	Cc. N/10 $AgNO_3$ Equivalent to Total Halogen.	Gm. KCl/100 Cc. Solution.
0	30.20	15.10	100.3	15.06	..
...	30.20	...	...	...	..
2	29.35	14.70	97.4	15.31	1.82
...	29.35	...	...	...	..
4	28.70	14.35	95.3	15.51	3.47
...	28.70	...	...	...	..
6	27.80	13.90	92.3	15.59	5.05
...	27.85	...	...	...	..
8*	27.25	13.63	90.5	15.84	6.60
10	27.35	13.66	90.8	15.92	6.74
15	27.35	13.66	90.8	15.84	6.50
20	27.30	13.63	90.6	15.92	6.81
25	27.30	13.63	90.6	15.92	6.81
Average	...	...	90.7	...	6.69

TABLE II.—KCl–KI–WATER SYSTEM AT 30° C.

Gm. KCl Added per 100 Cc. KI Solution.	Cc. KIO_3 Used.	Cc. N/10 $AgNO_3$ Equivalent to KI from Col. 2.	Gm. KI/100 Cc. Solution.	Cc. N/10 $AgNO_3$ Equivalent to Total Halogen.	Gm. KCl/100 Cc. Solution.
0	31.10	15.54	103.2	15.80	0.78
...	31.15	...	...	...	..
2	30.30	15.12	100.4	15.85	2.03
...	30.30	...	...	...	..
4	29.50	14.75	98.0	16.21	4.21
...	29.50	...	...	16.16	..
6	29.20	14.60	96.8	16.46	5.53
...	29.20	...	...	16.61	..
8*	28.25	14.12	93.6	16.77	7.92
...	28.20	...	...	...	..
10	28.10	14.00	92.8	16.64	7.85
...	28.30	...	...	...	..
15	28.00	14.00	92.8	16.59	7.74
...	28.00	...	...	...	..
20	27.95	14.00	92.8	16.59	7.74
...	27.95	...	...	...	..
25	27.85	13.92	92.4	16.77	8.52
...	27.85	...	...	...	..
30	27.90	14.00	92.8	16.64	7.29
...	27.90	...	...	...	..
Average	...	...	92.9	...	7.84

TABLE III.—KCl-KI-WATER SYSTEM AT 40° C.

Gm. KCl Added per 100 Cc. KI Solution.	Cc. KIO_3 Used.	Cc. $N/10$ $AgNO_3$ Equivalent to KI from Col. 2.	Gm. KI/100 Cc. Solution.	Cc. $N/10$ $AgNO_3$ Equivalent to Total Halogen.	Gm. KCl/100 Cc. Solution.
0	32.20	16.10	107.2	16.13	..
...	32.20	...	...	...	..
2	31.40	15.72	104.5	16.40	2.04
...	31.40	...	...	...	..
4	30.40	15.20	101.2	16.67	4.39
...	30.35	...	...	...	..
6	29.40	14.70	97.9	16.55	5.55
...	29.40	...	...	...	..
8*	28.85	14.44	96.2	16.94	7.49
10	28.75	14.38	95.7	17.18	8.39
15	28.80	14.38	95.9	16.88	7.49
20	28.80	14.38	95.9	16.94	7.67
25	28.80	14.38	95.9	17.09	8.12
30	28.7	14.28	95.5	17.08	7.88
Average	...	...	95.9	...	7.86

* These data show that with 8 or more grams of KCl per 100 cc. of the KI solution the system is in equilibrium with a solid phase containing both KCl and KI.

TABLE IV.—SOLUBILITY OF KCl.

Temperature, ° C.	Gm. KCl/100 Cc. Solution.
20	29.74
30	31.88
40	33.98

RESEARCH DEPARTMENT OF THE CHEMICAL AND PHARMACEUTICAL LABORATORIES,
E. R. SQUIBB AND SONS,
BROOKLYN, N. Y.

A STUDY OF FOWLER'S SOLUTION.

BY CHARLES SCHWARTZ, JR.*

The fact that Fowler's Solution is subject to deterioration on standing is well known. Its alkalinity also has proven to be objectionable in the compounding of many medicines. It seems, then, that if the U. S. P. formula could be modified so that the alkalinity would be reduced without causing more rapid decomposition, a more desirable product would result. Since moldy growths often develop in the Solution, the addition of a suitable preservative would also serve to improve it.

The formula of Fowler's Solution as given in the U. S. P. X is as follows:

Arsenic Trioxide	10 Gm.
Potassium Bicarbonate	20 Gm.
Compound Tincture of Lavender	30 cc.
Distilled Water, a sufficient quantity to make	1000 cc.

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Each hundred cubic centimeters must contain the equivalent of not less than 0.975 Gm. and not more than 1.025 Gm. of As_2O_3.

A résumé of the formulas adopted by foreign pharmacopœias is of interest. Chart I represents a comparative study of the principal ones. A study of this chart shows: (1) that in addition to potassium bicarbonate, the hydroxide and carbonate of potassium are also used; (2) that the majority are more or less alcoholic and (3) that the final products are in some cases nearly neutral, while in others, are alkaline to varying degrees.

E. M. Smelt[1] reports an investigation of the keeping properties of the solution adopted by the British Pharmacopœia. The latter solution is of particular interest, in that it is almost neutral in reaction. His findings are that: (1) the addition of preservatives or the proper adjustment of p_H inhibits the growth of molds; (2) the depositing of crystals can be controlled by increasing the alkalinity or acidity, and (3) the use of sodium hydroxide instead of potassium hydroxide encourages rather than prevents the growth of molds.

Although much work has been done on all of these solutions, their diversity in formulas indicates that a product satisfactory in all respects has not yet been attained.

CHART I.

Title.	Arsen. Triox.	Pot. Bicarb.	Pot. Carb.	5% Liq., Pot. Hydrox.	Sp. Lav.	Tr. Lav.	Co. Sp. Balm.	Alcohol.	Acid. Hydrochl. Dil.	Water Sufficient Quantity to Make.
Liquor Potassii Arsenitis U. S. P. 1926	10 Gm.	20 Gm.	....	...	..	30 cc.	....	....	....	1000 cc.
Liq or Arsenicalis B. P. 1932	10 Gm.	....	....	100 cc.	..	...	....	....	*28 cc.	1000 cc.
Liquor Arsenicalis, Fowleri Netherlands P. 1926	10 p.	....	10 p.	...	40 p.	...	...	....	*35 p.	1000 p.
Liquor Kalii Arsenitis Swedish P. 1925	10 Gm.	10 Gm.	....	...	10 cc.	...	....	....	50 cc.	1000 cc.
Liquor Kalii Arsenicosi German P. 1926	10 p.	10 p.	....	...	30 p.	...	....	120 p.	....	1000 p.
Kalium Arsenicosum Solutum Italian P. 1929	10 p.	10 p.	....	...	..	...	....	100 p.	....	1000 p.
Soluté D'Arsénite De Potasse French P. 1908	10 Gm.	....	10 Gm.	...	..	...	30 Gm.	120 Gm. (90%)	....	1000 Gm.

Abbreviation, p. = parts.

EXPERIMENTAL.

In view of the probability that some of the alkali is consumed by the tinctures and spirits commonly added to flavor, color or preserve the solution, it was decided to eliminate such agents, substituting for them alcohol or glycerin, both of which should exert a preservative action. Further, since the bicarbonate, hydroxide and carbonate of potassium have all been used, a comparison of the stabilities of solutions made with each seemed worth while.

Accordingly, twelve solutions were prepared containing varying amounts of the above-named agents. In all cases, the alkali content was reduced below that

[1] E. M. Smelt, *Quart. J. Pharm. Pharmacol.*, 6 (1933), 375.

officially specified. U. S. P. materials were used throughout, the sample of arsenic trioxide available assaying 99.5%, undried. The solutions, excepting one, were stored in corked bottles of white glass, not completely filled, since this would best duplicate ordinary dispensary conditions. In order to ascertain the effect of storage in well-filled, glass-stoppered bottles, the twelfth was stored in this manner.

The solutions were assayed immediately after preparation and subsequently at ten-day intervals, according to the U. S. P. procedure. A commercial sample which had been carefully stored for an indefinite period in the original corked bottle of amber glass was also assayed to determine, if possible, just how far the decomposition would proceed. The latter solution was the product of a reputable manufacturer and was labeled U. S. P.

CHART II.—FORMULAS USED IN PREPARING THE TWELVE SOLUTIONS.

Ingredients.	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.	No. 13.*
Arsen. Triox.	10 Gm.	10	10	10	10	10	10	10	10	10	10	10	10
Pot. Bicarb.	.....	...	7.6	...	...	7.6	...	7.6	5	....	...	...	20
Pot. Hydrox.	.....	5	....	...	5	....	...	....	...	3.4	...	...	.....
Pot. Carb.	.....	...	....	6	...	....	6	....	...	....	4	...	.....
Alcohol	.....	50 cc.	50	50	...	....	...	30	...	....	50	50	Co. Tr. Lavend. 30 cc.
Glycerin	100 cc.	...	....	...	50	50	50	....	50	50	...	...	.....
Dist. Water *q. s.*	1000 cc.	1000	1000	1000	000	1000	1000	1000	1000	1000	1000	1000	1000

* A commercial product labeled U. S. P.; hence the U. S. P. quantities are tabulated.

CHART III.—RESULTS OF ASSAYS MADE EVERY TEN DAYS, EXPRESSED AS GM. OF As_2O_3 PER 100 CC.; ALSO LOSS OF As_2O_3 PER 100 CC. IN GM.

Sol. No.	0 Days.	10 Days.	Total Loss.	20 Days.	Total Loss.	30 Days.	Total Loss.	40 Days.	Total Loss.	50 Days.	Total Loss.	60 Days.	Total Loss.
1	0.989	0.987	0.002	0.979	0.010	0.972	0.017	0.972	0.017	0.972	0.017	0.972	0.017
2	0.998	0.995	0.003	0.991	0.007	0.991	0.007	0.989	0.009	0.989	0.009	0.989	0.009
3	0.998	0.995	0.003	0.991	0.007	0.991	0.007	0.991	0.007	0.991	0.007	0.991	0.007
4	0.989	0.988	0.001	0.986	0.003	0.981	0.008	0.980	0.009	0.980	0.009	0.980	0.009
5	1.001	0.995	0.006	0.995	0.006	0.993	0.008	0.992	0.009	0.991	0.010	0.991	0.010
6	0.998	0.997	0.001	0.994	0.004	0.994	0.004	0.994	0.004	0.994	0.004	0.992	0.006
7	0.997	0.997	0.000	0.994	0.003	0.994	0.003	0.992	0.005	.992	0.005	0.992	0.005
8	0.998	0.997	0.001	0.991	0.007	0.991	0.007	0.991	0.007	0.991	0.007	0.991	0.007
9	1.002	1.001	0.001	0.993	0.009	0.991	0.011	0.991	0.011	0.991	0.011	0.991	0.011
10	1.002	1.001	0.001	0.992	0.010	0.992	0.010	0.992	0.010	0.992	0.010	0.992	0.010
11	1.004	1.002	0.002	0.994	0.010	0.994	0.010	0.994	0.010	0.992	0.012	0.992	0.012
12	0.993	0.989	0.004	0.984	0.009	0.984	0.009	0.984	0.009	...	...	...	...
13	0.958	0.958	0.000	...	...	...	...	...	...	...	...	...	...

The formulas of the twelve solutions are summarized by Chart II. Equivalent quantities of the alkali salts were used, taking into account the purity rubric as stated in the U. S. P., as follows:

	K_2CO_3.	$KHCO_3$.	KOH.
Molecular weights	138.21	100.11	56.11
Equivalent weights	138.21	200.22	112.22
Assumed amount of water present	15%	negligible	15%
Corrected equivalent weights	162.6	200.22	132.0

Chart III tabulates the results of the assays, together with the loss in trivalent arsenic content in solution. Within the first ten-day period, sedimentation was noted in the two solutions containing no alkali. Whereas the sedimentation was marked in these two solutions over the total period of observation, the amount shown by all of the others was negligible. The commercial product had a crystalline deposit, as well as a small amount of gelatinous residue. None had an unpleasant odor.

DISCUSSION.

The twelve solutions may be divided into two groups according to the total loss of trivalent arsenic within sixty days, as follows:

Group I.

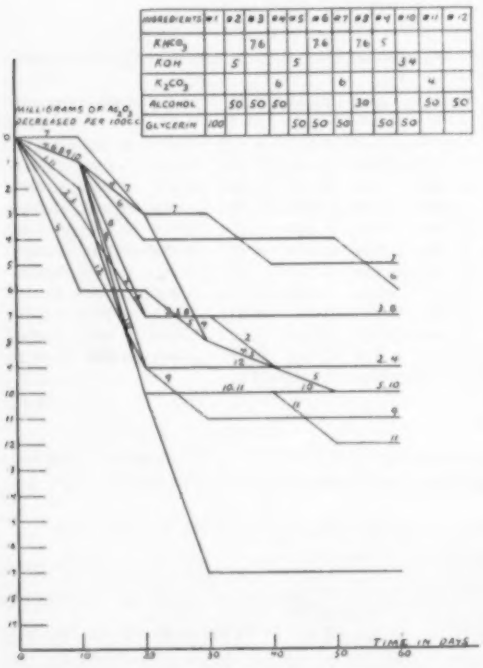
Solution 3—7 mg. decrease As_2O_3 per 100 cc.
Solution 6—6 mg. decrease As_2O_3 per 100 cc.
Solution 7—5 mg. decrease As_2O_3 per 100 cc.
Solution 8—7 mg. decrease AsO_{23} per 100 cc.

Group II.

Solution 1—17 mg. decrease As_2O_3 per 100 cc.
Solution 2— 9 mg. decrease As_2O_3 per 100 cc.
Solution 4— 9 mg. decrease As_2O_3 per 100 cc.
Solution 5—10 mg. decrease As_2O_3 per 100 cc.
Solution 9—11 mg. decrease As_2O_3 per 100 cc.
Solution 10—10 mg. decrease As_2O_3 per 100 cc.
Solution 11—12 mg. decrease As_2O_3 per 100 cc.
Solution 12— 9 mg. decrease As_2O_3 per 100 cc.

The average decrease in Group I was 6.25 mg., whereas in Group II it was 10.87 mg. The conclusion can be drawn here that the solutions of which Group I consists demonstrated the greatest stability over a period of sixty days. We find that potassium bicarbonate had been used in the preparation of three of the four solutions in this Group. The only other one containing potassium bicarbonate (No. 9) showed a total decrease of 11 mg., but inasmuch as the quantity used had been reduced to a greater extent in this solution, it would indicate that there must be a minimum amount of the salt required to furnish this stability. Solution No. 7, containing potassium carbonate and five per cent glycerin, also stood up very well.

CHART IV.



In the solutions in which potassium hydroxide had been used (2, 5, 10), there was an average decrease of 9.6 mg., showing it to be much less efficient than potassium bicarbonate. The other two solutions in which potassium carbonate was used (4, 11) showed an average loss of 10.5 mg. It is interesting to note that the stable solution using potassium carbonate contained glycerin, while the less stable ones were alcoholic. All solutions containing the lesser amounts of alkali or no alkali at all proved to be comparatively less stable.

Solution No. 12, which had been stored in a well-filled, glass-stoppered bottle, showed a total loss of only 9 mg. in 40 days, having exhibited no more decrease after 20 days. This mode of preservation apparently retarded its rate of decomposition, since it contained no alkali.

Very little can be said concerning the advantages of alcohol or glycerin over each other, except as previously mentioned in the case of the solutions made with potassium carbonate. The fact is, however, that none of the solutions showed any visible traces of moldy growths, indicating

at this point, that either will function well as a preservative, providing 60 days is sufficient time for the development of a mold.

The commercial sample assayed 17 mg. of arsenic trioxide below the minimal amount allowed per hundred cubic centimeters by the U. S. P. It had a rather marked sedimentation, partly crystalline and partly gelatinous. As stated before, its age was indefinite, but its analysis gives us an idea of just how much deterioration can be ultimately expected using the U. S. P. formula. Only one of the solutions here prepared fell below the U. S. P. requirement, the latter being Solution No. 1 which contained no alkali at all.

Chart IV compares not only the decreases in strengths, but also the decrease rates. It will be noted that the rate is rather great at first, after which a point of equilibrium seems to be reached. The amount of air space in the bottle is probably a factor strongly influencing this initial drop. A further study of this Chart reveals the following points: Solutions Nos. 3, 8, 10, 12 all show no deterioration after 20 days; Nos. 9, 1 none after 30 days; Nos. 2, 4, 7 none after 40 days; and Nos. 5, 11 none after 50 days. No. 6 apparently has not yet reached a point of equilibrium.

CONCLUSIONS.

(1) Using equivalent quantities of potassium bicarbonate, potassium carbonate or potassium hydroxide in lesser amounts than indicated in the U. S. P., solutions may be prepared which do not fall below the official strength within a sixty-day period.

(2) The bicarbonate appears to be the most efficient of these three potassium salts in so far as stability of the product is concerned.

(3) The percentage of potassium bicarbonate may be advantageously reduced from the present 2 per cent to around 0.76 per cent, a decrease of over 60 per cent.

(4) In place of the 3 per cent of Compound Tincture of Lavender now used, about 5 per cent of alcohol or glycerin may be substituted, again providing no mold will appear after 60 days.

(5) Dispensers should be urged to make use of small bottles, well-filled and tightly stoppered, for storage purposes. This work is being continued.

ADDENDUM.

Fowler's Solution has been retained in the U. S. P. XI, but it is to be a colorless and flavorless solution. Apparently the Compound Tincture of Lavender was objectionable. That the alcohol present served a useful purpose has been suggested by various writers.

Mr. Schwartz was asked to conduct a series of time experiments, the results to date being herewith presented.

It is worth while noting that only one of the solutions has deteriorated below the U. S. P. minimum requirement. The suggestions offered in previous reports that the extractive in the Compound Tincture of Lavender stimulated oxidation of the trivalent arsenic may be substantiated by Mr. Schwartz's report if the solutions have reached a point of equilibrium, and will display no further deterioration. The selection of the alkali to be used and the quantity to be used will become a pharmaceutical problem. The problem of incompatibility will be a major one.—H. A. LANGENHAN.

AN INTERESTING COLLECTION OF MORTARS.*

BY CHARLES H. AND MILLICENT R. LAWALL.

Where and when did the mortar and pestle originate as a pharmaceutical utensil? Dictionaries digress in their definitions and encyclopedias entirely omit the subject or dismiss it in a few lines. It seems to be a forgotten or neglected subject, and yet from the crude woodcuts of the early incunabula to the literature of the 19th and 20th centuries, we find the mortar and pestle symbolic of pharmacy. We find actual examples of Arabian and even of Roman mortars but beyond them there lies an impenetrable mystery. We have found no reference to the mortar and pestle in the more ancient Egyptian pictorial writing nor even reference to these implements in the catalog of the British Museum. The translators of the Ebers Papyrus, which gives hundreds of formulas for dozens of kinds of pharmaceutical preparations makes no mention of the mortar and pestle, although they use the terms "casserole," "jug," "hennu-vessel" and "flask" to denote the kinds of apparatus directed.

Many formulas in the Ebers Papyrus call for pills and suppositories, and as the directions to crush or pound are frequently found, it may be that they employed the mortar and pestle; if this is so the fact has been carefully concealed. We know that mortar and pestle-like implements of stone and wood were used by primitive races in both the old and the new worlds for grinding cereals into coarse meal, but we cannot trace the connecting link between this household use and their employment in pharmacy.

When we come to Roman times and customs we find the mortar and pestle in a very advanced form. Whence did it come? Probably not from the Orient, at least not from China, for the Chinese grinding device corresponding to our mortar is still in the form of a boat-shaped trough in which a sharpened iron disc is rolled back and forth. Probably the popularity of the electuary and of the medicated fruit pastes called confections gave rise to a need that was quickly filled. Roman mortars have come down to us of marble, earthenware, stone, wood and bronze. The shapes are very much like the mortars of later times. One form of Roman mortar seems to have entirely disappeared, however, from practical use in later times, and is found only as a museum piece. It is the quern or metal mortar with a tightly fitting metal lid which had a hole in the top through which the handle of the pestle could pass. There were earthenware, stone and marble mortars, too, which were mainly employed in the kitchens of the Roman households. This culinary use of the mortar continued down to late Colonial times in America, the metal mortars being used for contusing spices, while the marble mortars were used for making almond paste and similar soft mixtures. The Arabs and Persians used the mortar in pharmacy, probably having learned its use from the Romans. It is toward the close of the medieval period and throughout the Renaissance that we meet the copper, bronze, brass and iron mortars in greatest numbers. The esteem in which mortars were held in pharmacy, and the important position which they occupied is attested by the fact that many of them were inscribed with the date of the origin and

* Section on Historical Pharmacy, Madison meeting, 1933.

frequently with the name of the owner and sometimes of the metal worker who made the mortar.

Perhaps the introduction of gunpowder into warfare had something to do with the rapid influx of metal mortars, for we learn that the mortars were frequently cast in gun foundries in the 15th and 16th centuries. We learn also that bell foundries frequently cast mortars. Here were two sources of mortars—diverse and antagonistic. It is interesting, too, to note that there was a period covering several centuries when a religious motif seemed to dominate certain phases of pharmacy and medicine. It is during this period that we meet with mortars bearing religious mottoes and precepts, such as "Lof Got von all" (Praise God above all) on Flemish mortars; "En Dieu est mon espoir" (In God is my hope) on French mortars and similar phrases on mortars cast in other lands.

The word "mortar" is derived from the Latin word *mortarium*, which is said to have come from the root word "*mordeo*," to bite (which also gives us the word "morsel"). This in turn, may have come from the Sanskrit word "*mrdi*" meaning to grind or to pound, and which is also used to denote the implement or vessel in which the pounding or contusion may be accomplished.

Plato makes mention of the mortar in his writings but whether as a culinary or pharmaceutical utensil, we are not sure. Juvenal specifically makes mention of the mortar as an instrument used in the trituration of drugs. Pliny also refers to it.

The oldest English reference to the mortar in the New Oxford Dictionary, of Murray, is in a Saxon Leech book of about 1000 A.D., in which the word is spelled "*morterc*." When we arrive at Elizabethan times we find a contemporary writer commenting at some length on the particular uses to which mortars of different kinds were to be put. "Of morters likewise they ought to have divers sorts for all precious stones (that enter into electuaries) and corall ought not to be beaten in a brazen morter, but pearls and corall ought to be beaten in a morter of white marble; precious stones must be made or grinded into pouder upon a stone called in Latine, Lapis Porphirius, which is a kind of red marble. Also purgations or electuaries, pills or powders mingled with syrups ought not to be dissolved in brazen morters, but in morters of glasse, of stone or of fine wood; yea, and if they were of silver for great men of high degree, it were best. Also some ointments ought to be made in morters of lead."

There is a vessel akin to the mortar and pestle found in South America, called the "*metate*" which consists of a concave stone surface, over which a stone roller, tapering toward both ends is rolled. This type of grinding device has also been found in the ruins of the circular huts of the original Britons in North Wales.

The Romans had special manufactories for *mortaria* in Britain, from which the wares were exported to Rome and Gaul.

The collection of mortars which we are about to describe is at the Philadelphia College of Pharmacy and Science and includes specimens of many types of mortars of various periods and countries, some of them having interesting individual histories as well. Let us proceed to discuss them in the order of the accompanying illustrations.

No. 1*a* and No. 1*b* are examples of stone mortars and pestles of American Indian origin. The one on the left is very crude, being simply a piece of sandstone, irregular in shape, very crudely hollowed out, the hollow being very shallow. The

pestle is a crudely formed piece of similar sandstone. The specimen on the right is made from a large pebble, obviously water washed; the hollowed out portion is very regular in shape, and the pestle, which is of a finer grained stone, is well shaped and fits the concavity as well as the average pharmaceutical mortar and pestle fit each other. Unfortunately, the geographic locality from which these specimens came is unknown.

Figure 2*a* is an example of a lignum vitæ mortar and pestle, machine turned and polished. It is about 7 inches tall and about 5 inches in average diameter. It is 18th century English.

Figure 2*b* is an example of a wooden mortar and pestle, which is reputed to

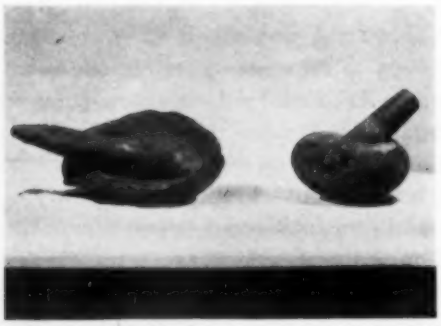


Fig. 1, *a*—Crude stone mortar of American Indian origin. *b*—Stone mortar of American Indian origin.

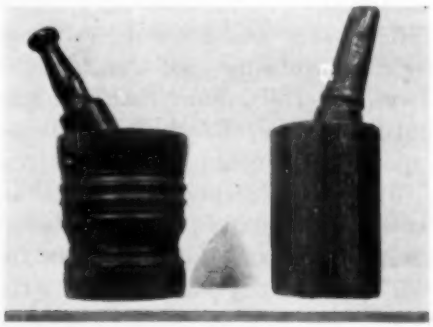


Fig. 2, *a*—Lignum vitæ mortar and pestle of English or Colonial origin. *b*—Crude wooden mortar of American Indian origin.

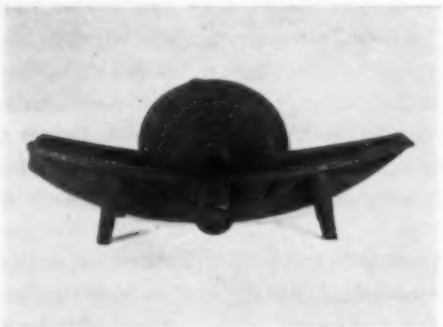


Fig. 3.—Chinese substitute for the mortar and pestle.

Fig. 4.—Stone mortar and pestle from Mexico.

have been made and used by a tribe of Shinnecock Indians, whose camp was on Long Island in Colonial days. The mortar is crudely formed from a small section of tree trunk of hard wood, and the pestle of hard wood of a different variety.

Figure 3 illustrates the Chinese substitute for the mortar and pestle. As a contusing and a cutting device, it is excellent, but for triturating it leaves much to be desired.

Figure 4 shows a small mortar and pestle of Mexican native origin. It is made of very coarse and very hard volcanic rock and is undoubtedly intended for household

purposes probably for grinding the red peppers of which the Mexicans are so very fond.

Figure 5 is a very interesting example of a Syrian mortar and pestle, such as is used in Syrian and Arabian households for contusing coffee. Coffee is an indispensable adjunct to hospitality in the near East. It is served not only at the close of a meal, but also when men meet on business occasions. To leave before coffee is served is considered an insult. The coffee is always freshly ground in a wooden mortar of this sort, with a very long wooden pestle. Both mortar and pestle are beautifully decorated by wood carving inlaid with light colored pigment. A shallow-bowled brass spoon for removing the coffee from the rather shallow and narrow hollow in the mortar, is attached to the mortar by a brass chain. In this particular specimen the Arabic inscription on the spoon is of more than passing interest. Translated, it reads "Made by planter Abi Kovzaza, May 27, 1327."

Figure 6 is an example of a mortar carved from alabaster, which is a fine-grained form of calcium sulphate. It is in an unfinished condition, and is probably intended for ornamental purposes rather than practical use.

Figure 7*a* is an example of a marble mortar of the Colonial household type, dating from the 18th century. Its companion, 7*b* is a smaller mortar of the same style. These marble mortars are sometimes found of a very large size, large specimens occasionally weighing more than 100 lbs.

Figure 8 is an illustration of a Chinese mortar and pestle made of porphyry. It is of a very unusual shape, being oval, about ten inches long and nearly four inches high. Both mortar and pestle are of a brownish pink color and beautifully polished. No definite date can be assigned to this mortar, but it is probably very old. The mortar and pestle are probably made from different lots of porphyry, as the grain and color of the two pieces are slightly different.

Figure 9 is a bronze pestle, very much corroded, which was found among some Roman relics unearthed in a street in Liverpool, England, some years ago. It is probably the oldest specimen in the collection, but its shape is identical with that of pestles made nearly two thousand years later.

Figure 10 is an unusual specimen of a mortar and pestle of solid ivory, beautifully turned and polished, and is said to be of Spanish origin, and to date from the 16th century. It was probably used as a "cosmetic" mortar.

Figure 11 shows two very interesting specimens, both of Arabic origin. That on the left came from a collection of mortars once owned by Enrico Caruso, the great tenor. It bears the following inscription in Arabic: "Made by Mohammed Kaghen 1570, and presented to Mohammed Bafr." This mortar is of iron or steel. Its companion (*b*) on the left is of copper, with a long-handled, flat-headed copper pestle; both mortar and pestle are very much corroded. This specimen is said to have been found in a well at Damascus, and dates from the period of the Crusades, or even earlier. It is equipped with a ring handle, the ring being frequently found on Arabic or Moorish mortars, furnishing a convenient method of carrying the mortar, when traveling by caravan.

Figure 12 is that of a bronze Arabic mortar, with very fine decorative tooling and an inscription in Arabic, which reads as follows when translated: "The owner of blessedness and gifts, Abbas Odesansen, member of Alnic Usac, 1226." There is also on another part of the mortar, the name of a woman—"Sahi Bet Ali," who was

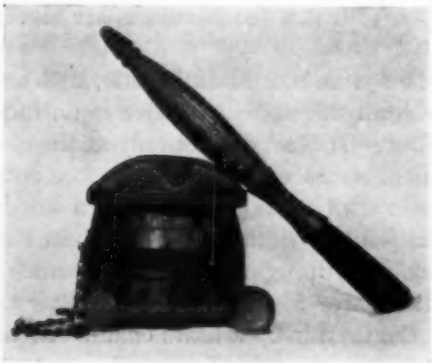


Fig. 5.—Syrian coffee mortar dating from the 14th century.

Fig. 6.—An alabaster mortar and pestle, unfinished.

Fig. 7, *a*—A marble mortar of the "Colonial" household type. *b*—A marble mortar of the "Colonial" household type.

Fig. 8.—A Chinese mortar and pestle of pink porphyry.

Fig. 9.—A bronze pestle of Roman origin, discovered in England.

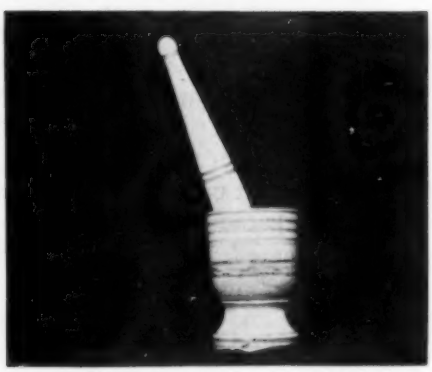


Fig. 10.—A carved ivory mortar and pestle of Spanish origin.

probably the original owner. It was purchased by a collector who brought it from Palestine.

Figure 13 is an illustration of a bronze mortar, with very fine inlaid decorations in a lighter colored metal. The shape of the mortar is very unusual. The inscription appeared to be in Arabic, but proved to be neither Arabic, Turkish, Syrian or Persian. The inscription was outlined in white pigment and photographed, and

the photograph sent to Constantinople, where it was deciphered. The report on it was as follows: "The inscription is in the dialect of a certain Persian sect of fire worshipers (Alevy), and the translation is: 'A mill made of a thousand stones.' No definite date can be assigned to this mortar, but it is probably very old. An expert who saw this mortar says that it is certainly of an origin not later than the 13th century, and may be much older."

Fig. 11, *a*—A 16th century Arabic mortar once owned by Caruso. *b*—A bronze Arabic mortar and pestle dating from the time of the Crusades.

Fig. 12.—A bronze mortar from Palestine with an Arabic inscription. Dated 1226.

Fig. 13.—Bronze Persian mortar, with inlaid inscription. Probably not later than the 13th century.

Fig. 14.—Ornamental mortar made of anthracite coal.

Figure 14 is an ornamental mortar made of anthracite coal, highly polished.

Figure 15*a* is an illustration of a bronze mortar of the late 18th century of either Russian or Polish origin.

Figure 15*b* is an early American bronze mortar and pestle. Figure 15*c* is a brass mortar and pestle of German origin, probably 18th century.

Figures 16*a* and 16*b* are both 17th century Spanish mortars.

There are a number of Spanish mortars in the collection, most of them beautifully decorated. The Spanish mortars are distinctive in their being shallow and having vertical ribs or decorative ridges, and in the absence of handles, except in a few instances where ring handles are found. Figure 17*a* is a bronze mortar and pestle of Russian origin, probably dating from the 18th century. Figure 17*b* is that

of a beautifully decorated Italian mortar; the unsymmetrical location and size of the handles is noteworthy in this specimen.

Figure 18*a* is a bronze mortar from Toul, France, dating from the 16th century;

Fig. 15, *a*—An 18th century bronze Russian or Polish mortar. *b*—An 18th century bronze American mortar. *c*—An 18th century brass German mortar.

Fig. 16, *a*—A 17th century bronze Spanish mortar. *b*—A 17th century bronze Spanish mortar.

Fig. 17, *a*—An 18th century bronze Russian mortar. *b*—A bronze Italian mortar, probably 17th century.

Fig. 18, *a*—Bronze mortar and pestle from Toul, France, 16th century. *b*—Brass Persian mortar with ring handle, 14th century. *c*—Bronze Spanish mortar, 17th century.

Fig. 19.—Brass mortar with dolphin handles and T-handled pestle, dated 1689.

Fig. 20.—Iron mortar and pestle with square handles, dated 1726.

Fig. 18*b* is a rare type of Persian mortar of brass, distinctively and handsomely etched, with the ring handles usually characteristic of mortars of Arabic origin. It is said to date from the 14th century. Figure 18*c* is that of a very early Spanish mortar showing the typical vertical ridges, and the Moorish influence in the ring handles.

Figure 19 is that of a brass mortar with dolphin handles, bearing the initials "I.B.B.Z.," and the date 1689. It was brought from Switzerland some years ago. The T shape of the pestle handle is unusual in this specimen. Figure 20 is that of an iron mortar and pestle, with square handles, bearing the date 1726. This is either of Russian or Polish origin. Figure 21 is an illustration of a wedgewood mortar and pestle, which was used in the store of Christopher Marshall in Philadelphia, before the time of the Revolutionary War.

Fig. 21.—Wedgwood mortar and pestle, used in store of Christopher Marshall, Philadelphia, before the Revolutionary War.

Fig. 22.—Iron mortar, 1784, formerly used in the pharmacy of Frederick Brown, Philadelphia.

Fig. 23, *a*—Dutch bronze mortar with dolphin handles, dated 1638. *b*—Dutch bronze mortar with dolphin handles, dated 1607.

Fig. 24.—Dutch bronze mortar without handles. Dated 1638.

Figure 22 is an illustration of an iron mortar and pestle, bearing the date 1784 painted on the side. It came from the pharmacy of Frederick Brown which was originally located at Fifth and Chestnut Sts. in Philadelphia. Frederick Brown was one of the founders of the Philadelphia College of Pharmacy and Science, and was

originally an apprentice in the store of Charles Marshall, the first president of the College, and the son of Christopher Marshall just referred to.

Figures 23*a* and 23*b* are of two bronze mortars of 17th century Dutch origin. They were cast by the same workman or foundry, for 23*a* bears the inscription "Henryk Horst me Fecyt, Ao1638," while 23*b* bears in the inscription "Heinrick ter Horst me fecit, Anno 1607." Both mortars are elaborately decorated and have handles in the form of dolphins. Figure 24 is a third mortar coming from this same foundry. It bears a similar inscription with the date 1638, but unlike the two previous specimens it has no handles.

Fig. 25, *a*—A 17th century bronze Spanish mortar. *b*—A 17th century bronze Spanish mortar. *c*—An early American mortar of unusual shape. *d*—A 17th century bronze Spanish mortar.

Fig. 26, *a*—A cylindrical iron mortar, with molded decorations, originally in the Neergaard Pharmacy, New York. *b*—A graceful urn-shaped iron mortar from the Neergaard Pharmacy, New York.

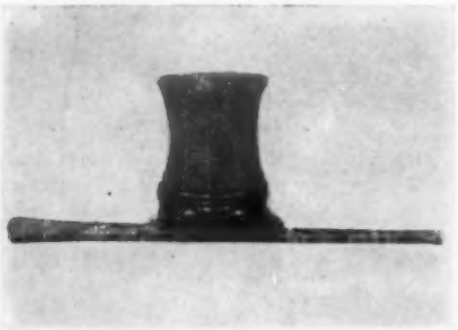


Fig. 27.—Large iron mortar with unusually long pestle. Early American with an interesting Philadelphia history.

Fig. 28.—Large bronze mortar, bearing date 1733, with reversible pestle.

Figures 25*a*, 25*b* and 25*c* are bronze mortars of the 17th century of Spanish origin. Specimen *a* has the letter M repeated four times in the decorations. The bottom of this mortar had evidently been worn through, for it has a new bottom riveted in place. Figure 25*c* is an iron mortar probably of American origin. Figure 26*a* and 26*b* are examples of early American iron mortars; *a* has a decorative design which is unusual on iron mortars; *b* is of a graceful urn-like shape, distinctive of mortars made in Colonial America. Both of these originally came from the Neer-

Fig. 29.—Very large bronze mortar finely decorated, dated 1704.

gaard Pharmacy in New York, now owned by Mr. David Costelo, to whom the College is indebted for the majority of the mortars described in this article.

Figure 27 is also that of an early American iron mortar of unusual shape and with a pestle of unusual length, the mortar being but $11^1/_2$ inches high. This mortar is known to have been used by the following apprentices and clerks in the pharmacy located at Third and Poplar Sts., Philadelphia: G. W. Bley, 1840, John Bley, 1844, Alex Bachman, 1848, Samuel Gerhard, 1849, Jacob H. Smith, 1853, Valentine H. Smith, 1853, Emil Herwig, 1854. During this period the proprietor of the pharmacy was George K. Smith. In 1856 the mortar was in the possession of John Ziegler, wholesale and retail druggist at Second and Green Sts., Philadelphia. In this same year Ziegler became associated with Valentine H. Smith, the firm name being Ziegler and Smith. In 1865 the firm name was changed to Valentine H. Smith & Co., and from that year until 1929, when this firm was merged with Smith, Kline and French Co., a number of well-known pharmacists in Philadelphia took their turns in using this mortar and pestle during their respective apprenticeships. Among these were Walter V. Smith, late president of the Smith, Kline and French Co., and Howard E. Smith, and Henry S. Godshall of the same Company. No. 28 is a handsome bronze mortar bearing the inscription "Soli Deo Gloria, Amsterdam Aº 1733."

No. 29 is a very large mortar, weighing nearly 150 pounds. It is very grace-

Fig. 30.—Finely decorated bronze mortar, with seated lions on handles and bearing the coat of arms of the Medici.

ful in shape and is elaborately decorated. The handles are in the form of winged angels. It is covered with elaborate scroll work, consisting of wreaths and angel heads. It bears the following inscription: "Filii Francisi de forinis pharmacis parandis fundendum curarunt. A. S. MDCCIV." This mortar was donated by Mr. Horatio N. Fraser of New York. No. 30 is a very unusual specimen, also donated by Mr. Fraser. It is of bronze with a glossy black patina. The handles are unlike those usually seen, being horizontal supports for seated lions. The design is that of a heraldic shield with a cherub on each side jointly holding a wreath over

Figs. 31 and 32.—Obverse and reverse of large brass mortar formerly owned by Frederick the Great.

Figs. 33 and 34.—Obverse and reverse of bronze mortar, elaborately decorated, formerly owned by Napoleon's pharmacist.

the center. The coat of arms is that of one of the numerous branches of the Medici family.

Figures 31 and 32 are the obverse and reverse of a large brass mortar and pestle which was once the property of Frederick the Great, or used in his imperial pharmacy. The front bears the imperial monogram of "Friederich Rex," surmounted by a crown. The opposite side bears the date 1767, and the stamped inscription "K No. 1" which was probably an inventory number. This mortar has an interesting history. During the World War the German government seized all brass for use in making munitions. A collection of mortars was seized just prior to the close of the war. Shortly after the war a large lot of all kinds of brass ornaments and untensils was offered for sale in New York, including some very fine

mortars, and among them was this one, which was purchased by David Costelo of New York.

Figures 33 and 34 are the obverse and reverse views of a veritable museum piece. It is a bronze or bell-metal mortar and pestle which belonged to one of Napoleon's apothecaries. The inscription around the top is as follows: "A Besançon-Beillemand-Pharmacien-Drogiste." Below this are laurel wreaths and imperial eagles. Below these is the name "Napoleon Empereur." Further below this are more laurel wreaths and robed figures. There is a double-ended pestle bearing the date "Anno 1802" elaborately engraved in bas-relief.

This mortar was at one time in the Rodman Wanamaker collection of Napoleana. The donors of the specimens just described are as follows: No. 4, Wm. L. Cliffe, '84, vice-president of the College. Nos. 7*a* and 7*b*, former president, Howard B. French, '70. No. 9, Joseph P. Remington, '66, one of America's pharmacists, and former dean of the Philadelphia College of Pharmacy and Science. No. 14, Ellerslie W. Davis, '16. No. 20, George B. Evans, '80, former member of the Board of Trustees of the College. No. 27, Walter V. Smith, '87, former member of the Board of Trustees of the College. No. 28, Horace B. Taylor, '57. Nos. 29 and 30, Horatio N. Fraser, '72, former member of the Board of Trustees. Specimens 2*a*, 2*b*, 5, 6, 8, 10, 12, 13, 15, 15*a*, *b* and *c*, 16*a* and *b*, 17*a* and *b*, 18*a*, *b* and *c*, 23*a* and *b*, 25*a*, *b*, *c* and *d*, 26*a* and *b*, 31–32, 33–34, were all donated by David Costelo, '79, of the Neergaard Pharmacy of New York. There are not many large collections of mortars in the United States, the largest collection at present being the one owned by E. R. Squibb & Sons. There is no collection to our knowledge, however, which possesses so many diversified, interesting and valuable mortars as the one we have herein attempted to describe.

ABSTRACTS OF PAPERS PRESENTED BEFORE SECTION ON PRACTICAL PHARMACY AND DISPENSING, A. PH. A., WASHINGTON MEETING, 1934.

"The Extemporaneous Preparation of Intravenous Solutions Saline and Dextrose," by Robert S. Fuqua.

The paper submitted attempts to outline simple procedures for the preparation of satisfactory intravenous solutions, containing such substances as Sodium Chloride, Sodium Citrate and Dextrose.

Beginning with the distilled water required, and emphasizing the necessity for purity of, and absence of bacterial contamination in this solvent, the relatively simple matter of making solutions considered and then stress the importance of proper filtration to insure freedom from mechanical impurities—especially filter paper shreds.

The thought in mind is to outline both the usual pharmaceutic procedure of preparing simple solutions, with filter paper being used as the filtering medium, and also a hospital method for preparing buffered solutions in small lots: using the Berkefeld candle type filters to clean.

Sterilization, and the temporary preservation of sterile solutions, are discussed briefly. The need for having such solutions as nearly neutral as possible is noted, and attention is directed to factors which affect the values of same adversely.

"A Note on the Assay of Reduced Iron," by Margarethe Oakley and John C. Krantz, Jr.

A comparison of the mercuric chloride and copper sulphate methods for the determination of reduced iron has been studied.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

Editor's Note: Shall the pharmacist go after the dental prescriptions? By all means. The following paper by Professor Schicks tells how it may be done and also tells how we may prepare our students to serve the dental profession. It is worthy of careful perusal by all faculties of colleges of pharmacy.—C. B. JORDAN, *Editor*.

SHALL COLLEGES OF PHARMACY TEACH DENTAL PHARMACY?

BY GEORGE C. SCHICKS.*

The extension of the time period and the enlargement of the scope of course content in the present-day training of the student of Pharmacy stands as mute evidence of what has been uppermost in the minds of pharmaceutical educators. College courses have not been lengthened from two years to four nor course subjects doubled that the graduate in pharmacy might say, "I have attended college four years," nor has this change come about for the purpose of increasing the prestige of the profession of pharmacy.

No one will question the fact that professional prestige follows close upon increased training, a firmer scientific background and a greater adaptability in fields closely allied with pharmacy. But pharmaceutical educators have not thought first of professional prestige. Colleges of pharmacy have been scientific pioneers in professional usefulness. To such an end have their faculties shaped courses to widen the scope of the professional activities of their graduates. Professional usefulness must be the key-note of every pharmacy curriculum. Professional usefulness must be the pattern from which every basic scholastic activity of a college is fashioned. Professional usefulness must be first, last and uppermost in the minds of educators in our colleges; it must be—nothing else can be substituted, for professional usefulness is the salvation of Pharmacy.

It is fast becoming a reality that the man in pharmacy who can divorce himself most completely from the soda fountain, the cigar case, the cosmetic counter and the sandwich grill, is the man who has narrowed his competition to the minimum. May I say again—he alone among the keepers of shops is licensed by law to compound prescriptions. That has been the key-note of his training and his professional prestige will increase with his professional usefulness.

Each year splendid groups of fine young men and women leave our colleges of pharmacy—young people whose eyes have seen scientific wonders under microscopes; whose fingers have held tubes while scientific miracles have gone on within those glass containers; whose hands have stained slide after slide, that those eyes might behold the giants of disease which stalk among men. Are those young people going to give up their test-tubes and mortars and microscopes to make sodas or ham sandwiches?

Of course, they aren't. Those young people have caught the spirit of science. The spirit of science has captured them. They are the products of our colleges

* Rutgers University.

in the minds of whose faculties has been uppermost the ideal of professional usefulness.

It is this ideal of professional usefulness which is prompting me, a teacher in a college of pharmacy, to urge the association of colleges to emphasize the subject of dental pharmacy. Colleges are the scientific pioneers for professional usefulness and dentistry represents a large field for the prescription pharmacist.

There are some very definite reasons why dental pharmacy provides a fertile field for professional activity. Uppermost, perhaps, is the earnest desire of the dentists of this country to learn more about official drugs and preparations and the prescribing of them. Their enthusiasm and coöperation have been more marked than one dared even believe they could be. Here is a field where professional pharmaceutical usefulness is welcomed. In the few years that I have been engaged in this work, more than a thousand practicing dentists have given me their names and addresses requesting that they be kept informed regarding recognized and approved drugs and preparations. Letters have come unsolicited from outstanding dental educators and officials, encouraging us in our work and assuring us of their coöperation.

It has always been the privilege of the pharmacist, authorized by licensure, to serve the medical profession in all of its special branches. Dentistry represents the second largest field for prescription writing and therefore widens the scope of professional service.

Our student pharmacists need some training with regard to the needs of the dental profession. Much professional usefulness would be sacrificed if the service rendered is not an intelligent one.

The writing of prescriptions is a comparatively new field for the dentist. It must be remembered that the training of most dentists and of many physicians has been lacking in prescription writing. Colleges of dentistry recognize this deficiency and are strengthening their courses in Materia Medica and the prescription. The student pharmacist should be encouraged to develop an attitude of understanding and helpfulness. Ridicule of prescriptions will do much to retard coöperation between the dentist and pharmacist.

Some pharmaceutical supply houses have always made prescription writing as easy as possible for all branches of the medical profession. These houses are supplying dentists and physicians with prescriptions which in reality amount to nothing but a notation in good legible printing of a substance to be purchased at a drug counter, the patient to follow either the directions given on the bottle or package or those printed on the prescription. Such a practice robs the dentist of individuality in his prescriptions, encourages self-medication and discourages the use of any products other than the packaged type.

It would seem, then, that the student pharmacist should be thoroughly trained in Latin prescription writing. College courses in prescription writing should be so strengthened to assure adequate training. An accurate and brief method of writing prescriptions should be so outlined to the student that he could make helpful suggestions to the dentist when discussing prescription problems with him.

Charters, in his "Basic Curriculum Materials," mentions "Agents Acting on the Teeth and Gums," and totals them as numbering 121 substances. In a small booklet published by the N. A. R. D., entitled "Official Drugs and Preparations

Used in Dentistry," there are listed some 230 drugs and preparations official in the U. S. P. and N. F. A study of these items will reveal the many opportunities open to the pharmacist to supply these materials to the dental profession. At the present time a wide field for professional usefulness is lost to the manufacturers of dental supplies, for they are the only ones who are going after the business. It is their salesmen who supply practicing dentists with the information they get regarding the drugs they use in their practice.

Dentists in their practice use many of the same drugs and preparations used by the physicians, but unless such facts are pointed out to the student, he may pass them by with no thought as to their dental application. The teachers of Pharmacy, Materia Medica and Bacteriology should emphasize such drugs and preparations when they are studied in these courses and point out their special application to dentistry.

The questions now arise as to how and where in the pharmacy curriculum should dental drugs and preparations be considered and how much time should be allowed for this work?

It seems that a suitable place for the study of such drugs would be in the lecture and laboratory of Materia Medica or Pharmacology, Dispensing Pharmacy and Bacteriology. For instance, when the pharmacology of iodine is being considered, its use in dentistry should be mentioned, stressing the reasons for its use, the preparations commonly used, which may differ some from the U. S. P. and N. F. formulas but which contain official materials—whether or not it produces a permanent stain on the teeth, how such may be removed and the strength and solvents of iodine preparations used in the mouth, etc. Not only the antiseptic and germicidal value in the oral cavity should be considered but also its use in solutions such as a disclosing agent. The combination of iodine with other substances such as zinc chloride, potassium iodide, glycerin and water for this purpose should be noted.

It may be necessary to add a few new terms to the student's vocabulary, as in the uses of iodine as a "disclosing agent" and antiseptic and counter-irritant in the treatment of pericementitis. Attention should be brought to the fact that dentists usually use a weaker solution than the approximate 7% U. S. P. strength tincture. Those classes and combination of drugs used more commonly in dentistry, such as abrasives, obtundents, devitalizing agents, varnishes, etc., may be studied at some convenient time during the lecture and laboratory periods.

In dispensing pharmacy the student may be required to dilute the U. S. P. tincture of iodine with equal parts of glycerin, making a strength commonly used in dentistry—a strength not likely to cause severe irritation and one more readily uniting with the mouth secretions. To increase student technique, such a solution could be placed in glass ampuls—not that this has any special application to dentistry, but it would show how ampuls are filled and focus attention to the 3.5% iodine ampuls in the N. F.

In the same course, students should compound prescriptions used by dentists in office practice, and those written for patients. Characteristic prescriptions may be obtained from the files of local pharmacists and students could be asked to bring in dental prescriptions. Stock solutions and preparations which the dentist uses in his own office but does not usually prescribe should be made by the

student. For example, Talbot's Iodo-glycerol Solution, scouring powders, colored and flavored, obtundent solutions, digestive solutions or pastes for removing dead pulp or extraneous tissue, varnishes, disclosing refrigerant and counter-irritant solutions. The kinds of, and uses, for various abrasives and polishing agents found in tooth powders and pastes, such as precipitated and prepared chalk, tricalcium phosphate, tin oxide, pumice, magnesium carbonate, soap and others, should be referred to and their combinations studied and experimented with.

Tooth powders and pastes should be made by the student, using the above substances and others. The preparation of tooth-paste base should be given as an experiment. The formula for such a base appears in the September 1932, issue of the *Druggists Circular* and the February 1933, issue of the A. PH. A. JOURNAL. To this base, medication may be added upon prescription by the dentist. A similar experiment could be performed with vehicle mouth rinses.

The coloring and flavoring of substances such as sodium perborate should be considered. There is little excuse for requiring a patient to take ill-smelling or tasting medicaments. There are some substances, the flavoring of which might be experimented with by some especially interested students who are qualified to carry on the work, for instance, the preparation of a palatable solution of copper sulphate or chromic acid.

Since the lecture and laboratory work in dental pharmacy is not widely different from that usually studied in most pharmacy courses, a minimum of 10 hours of laboratory and 3 hours of lecture could be used to advantage in dispensing pharmacy. In bacteriology, when the antiseptics and germicidal power of certain agents are studied, special reference to dental use could be made. The germicidal claims of mouth washes and tooth pastes could be checked and compared, thus giving the student valuable information to discuss with the dentist. Attention could be brought to the fact that certain tooth pastes no longer bear the word "antiseptic" on the tube and some manufacturers of mouth washes have changed their dilutions to make claims more nearly true. In courses such as Materia Medica and Bacteriology special reference to the dental application of drugs and preparations should be mentioned as the drug is brought up for consideration.

Stress should be placed on the rulings of the Council of Dental Therapeutics of the American Dental Association, governing the acceptance of the drugs and preparations analyzed by its laboratory. Student pharmacists should be shown the wisdom of encouraging the use of non-secret dental preparations and preparations accepted by the Council.

At the present time there is not a publication known as "Accepted Non-Official Dental Remedies," although one is in preparation, and it is therefore necessary to get such information from the *Journal of the American Dental Association*. Permission has been granted me by the American Dental Association to publish in a pharmaceutical journal the list of accepted and rejected dental preparations. This information, it is believed, will be invaluable to the practicing pharmacist.

It will require extra effort on the part of the teacher to compile the necessary information regarding the drugs used in dentistry, as well as the arrangement of the laboratory experiments, but the work will be found most interesting and exceedingly worth while.

The following prescriptions may give some idea of the nature of the work:

℞ Iodine 3.50 Gm.
Potassium Iodide 1.20 Gm.
Zinc Chloride 1.00 Gm.
Glycerin 25.00 cc.
Distilled Water 25.00 cc.
Sig. Disclosing solution to be used by dentist.

℞ Zinc Chloride 1.00 Gm.
Solution Formaldehyde 0.25 cc.
Menthol 0.25 cc.
Oil of Cinnamon 0.50 cc.
Oil of Clove 0.50 cc.
Alcohol 25.00 cc.
Distilled Water to make 100.00 cc.
Tincture of Cudbear to color.
Sig. 4 cc. in half glass of water as mouth rinse.

℞[1] Iodine 20.00 Gm.
Phenol 60.00 Gm.
Glycerin 20.00 Gm.
Sig. To be used by dentist as a caustic.

℞[2] Pepsin 7.50 Gm.
Diluted Hydrochloric Acid 0.50 cc.
Glycerin 7.50 cc.
Alcohol 1.00 cc.
Menthol 0.05 Gm.
Eucalyptol 0.05 cc.
Methyl Salicylate 0.05 cc.
Distilled Water to make 100.00 cc.
Sig. Digestive solution for extraneous tissue.

℞[3] Camphor 47.5 Gm.
Menthol 47.5 Gm.
Alcohol to make 100.0 Gm.
Sig. For facial neuralgia.

℞[4] Rosin 20.00 Gm.
Chloroform 100.00 cc.
Sig. Varnish in dental work.

℞ Ethyl Aminobenzoate 10.0 Gm.
Balsam Peru 15.0 Gm.
Glycerin 20.0 Gm.
Sig. For painful socket.

℞ Arsenic Trioxide Gr. LXXX
Cocaine Hydrochloride Gr. XV
Oil of Clove to make a paste.
Sig. Devitalizing paste.

The college teacher can find many outstanding books which will give him great assistance in outlining his work. Such books as the following will be found invaluable:

Prinz, "Dental Materia Medica and Therapeutics," C. V. Mosby, St. Louis.

Prinz, "Dental Formulary," C. V. Mosby, St. Louis.

Buckley, "Modern Dental Materia Medica, Pharmacology and Therapeutics," Blakiston, Philadelphia.

Harris, "Dictionary of Dentistry," Blakiston, Philadelphia.

Fones, "Mouth Hygiene," Lea and Febiger, Philadelphia.

Fisher and Riethmuller, "Local Anesthesia in Dentistry," Lea and Febiger. Other reference books will be found listed among the dental textbooks of catalogs presented by publishers of scientific books.

Rutgers University College of Pharmacy has endeavored to stimulate a national interest in pharmaceutical service to the dental profession. Several colleges of pharmacy are now engaged in this important and helpful work. The undertaking is too great and the scope too national in character for any one college to undertake. I should like to urge the Association of Colleges to foster the opportunity which dental pharmacy offers for increased professional usefulness. I should like to ask them to again be pioneers in a field which offers so many possibilities for their graduate students.

[1] **PHENOL IODATUM N. F.**

[2] **LIQUOR PEPSINI ANTISEPTICUS N. F.**

[3] **MENTHOL CAMPHORATUM N. F.**

[4] **SOLUTIO RESINÆ CHLOROFORMICA N. F.**

NOTE: Many dentists use twice the amount of rosin in the same amount of chloroform.

THE EIGHTY-SECOND ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, WASHINGTON, D. C., MAY 7–11, 1934

ABSTRACTS OF THE MINUTES OF THE GENERAL SESSIONS.

Sessions of the Eighty-Second Annual Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION were held in Shoreham Hotel; but it was necessary to hold several of the sessions in Wardman Park Hotel. A list of members in attendance may be found on pages 519–521 of the May JOURNAL.

Some of the Committee Reports referred to in the Proceedings have been printed in the Council Minutes, pages 504–514 of the May JOURNAL; some are included in these minutes or will be printed in later issues of the JOURNAL under "Committee Reports" or under "Addresses."

FIRST GENERAL SESSION.

The First General Session of the Eighty-Second Annual Meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION was called to order by President R. L. Swain in the Theatre of Wardman Park Hotel, May 9th at 8:15 P.M. The following former presidents of the AMERICAN PHARMACEUTICAL ASSOCIATION were in attendance: (In order of seniority) James H. Beal, E. G. Eberle, William B. Day, Frederick J. Wulling, Charles H. LaWall, Samuel L. Hilton, Julius A. Koch, H. V. Arny, C. W. Holton, L. L. Walton, Theodore J. Bradley, H. A. B. Dunning, H. C. Christensen, Walter D. Adams, W. Bruce Philip. (The Dedication Exercises of the American Institute of Pharmacy are reported in the May JOURNAL, pages 478–490. The annual banquet is reported on pages 490–498 of the same issue.)

It was explained that this was a joint meeting with the House of Delegates and that after the presidential address the meeting would be turned over to the Chairman of the House of Delegates.

Vice-President Robert P. Fischelis presided while President R. L. Swain read his presidential address which was received with due appreciation by the members present. (See Address on pages 438–454 and Resolutions on pages 474–476.)

Vice-President Robert P. Fischelis announced that in accordance with the usual order this comprehensive, splendid address would be referred to the Committee on Resolutions.

James H. Beal was recognized. He commented favorably on the address of President Swain and stated that the ASSOCIATION had been honored by his dedicatory address and that of this evening. In making a presentation the speaker stated that one of the projects of great hope in connection with the American Institute of Pharmacy is the museum of Historical Pharmacy. He desired the privilege this evening of being not the first but one of the first to present an historic relic, a genuine madstone. Back in the sixties and seventies of the last century, a madstone was known as a peculiar mineral substance which when applied to the bite of a mad dog had the magic property of extracting the virus. He presented a genuine madstone, not an imitation—there were fraudulent as well as genuine madstones, and he has the authentic record of this for one hundred years. It comes down to us from four generations of pioneer physicians, practicing in Southwest Georgia and in the wilds of Northwest Florida.

This stone has the authentic record of four cures, complete cures of the bite of a mad dog. He humorously explained the results of the application but maintained that the properties of the madstone are as fully authenticated as that of some alleged remedial agents.

This particular substance or magic amulet has been known all over the world for hundreds of years, but only in the United States, so far as he knew, has it been called a madstone. In European and Asiatic countries it has been known as a bezoar. He requested Charles H. LaWall, author of "Four Thousand Years in Pharmacy," to tell a little of the story of the bezoar. The account given by the latter was received with great interest and will be made the subject of a brief historical paper in a later issue of the JOURNAL. Professor LaWall concluded by saying that the bezoar is a substance of particular interest in a museum such as is being established by the AMERICAN PHARMACEUTICAL ASSOCIATION.

President Swain thanked the donor for the gift and Dr. LaWall for his presentation and accepted the bezoar thankfully for the ASSOCIATION. Congratulatory greetings conveyed by cablegrams and telegrams were read from the following: Dr. José Guillermo Diaz, Havana; Dr. William Mair, Newcastle-on-Tyne; Harvey J. Donnell, North Pacific Branch, A. PH. A.; Samuel W. Fraser, Drug Chemical and Allied Trades Section, New York Board of Trade; J. J. Lynch, Oregon State Pharmaceutical Association; Portland Retail Druggists Association; Louis Ruxin, Northern Ohio Druggists Association; David Hooper, London, England; Herbert Skinner, London, England; Wheeler Sammons, Drug Institute of America, Inc.; British Pharmaceutical Society (see page 477, May JOURNAL).

The meeting was then adjourned.

SECOND GENERAL SESSION.

The Second General Session of the AMERICAN PHARMACEUTICAL ASSOCIATION was convened in Shoreham Hotel on Thursday, May 10th at 2:00 P.M. by President R. L. Swain. A message was received from Honorary Member F. Gladstone Hines, of London, congratulating the ASSOCIATION and greeting the members.

The report of the House of Delegates, covering the first and second sessions was read by Secretary Kelly and approved.

Julius Riemenschneider, of Chicago, was recognized by President Swain. He presented a London Pharmacopœia of 1673 on behalf of Wheeler Sammons for the Drug Institute of America.

President Swain thanked the donor for this evidence of friendship and assured him that the gift would find a permanent place in the American Institute of Pharmacy.

The minutes of the First General Session were read and approved.

Secretary Kelly referred to a number of congratulatory messages which had been received.

Chairman H. A. B. Dunning in speaking for the Headquarters Campaign Committee said he would make no extensive report but summarize what had been done during the past year; many things that might appear in his report are part of the Secretary's report. He said in part:

"There have been five thousand subscriptions from wholesalers, retailers and manufacturers and students. In all, there has been collected $507,744.95. All of that money has been spent for the site, the erection of the building, the furnishing of the building, the landscaping and the gardening. A little bit more than that has been spent. A very small sum, $35,000, will cover our deficiency. That doesn't mean that we are in any danger or that we have a big mortgage on our institution. It is a very small one which you and others will clear off within a very short time, whether you know it or not.

"I have told you in my other reports that every state in the Union has subscribed to this project, without exception, and some countries besides our own, including England, Canada and Porto Rico. You will be interested to know that the retailers with their smaller subscriptions have contributed their full part of this fund. The retailers' subscription has aggregated $232,203, and they have paid a very large percentage of their promises. The manufacturers have subscribed somewhat more, three hundred and one thousand and some odd dollars. The wholesalers are yet to do their duty, and it is my problem to have them fulfil their obligations. Up to this time they have subscribed fifteen thousand dollars.

"It is a matter of pride that the little state of Maryland is the second largest subscriber to this fund. Naturally, New York State is the largest. California did very well, $13,000; Missouri, $37,000; Ohio, $30,000; Pennsylvania, $33,000. I think it would please some of you to know that the late Dr. Utech, by his extraordinary energy and interest, was largely responsible for the substantial amount obtained from Pennsylvania.

"The building was completed and formally accepted on September 14, 1933. Many of these items that I might bring to your attention are so obvious since you have seen the building and visited it, that I won't take time to mention them.

"I mentioned in my address of yesterday the transfer of property, by the United States Government to us, and the exchange of some which we had to the United States Government. Fair exchange is no robbery. For your information, Constitution Avenue has been widened to eighty feet, or will be widened eventually to eighty feet—it makes our site very much more impressive. Twenty-Second and Twenty-Third Streets have been widened up to the building line and

will eventually be widened to a greater degree, and Twenty-Second Street will undoubtedly become one of the principal boulevards leading over the new Memorial Bridge, past the Lincoln Memorial, through Washington north and south.

"I come to the real point of this meeting. The real point in this meeting in my mind is to tell the members of the ASSOCIATION and ask for their interest, help and sympathy—that I persuaded the Council to permit me to be Chairman of a new committee to obtain a million dollars as a maintenance fund.

"I expect to start that effort within the next week or two. I shall ask the help of the State chairmen to get whatever they can from the individual pharmacists, but more particularly for them to see those men of greater means in their localities whom I shall write to or get in communication with, one way or the other; either see those men personally, or have some one see them and tell them what this building really means to pharmacy, and to them and to the public.

"I feel that if men with means could realize the true value of the American Institute of Pharmacy to them, that the men in the pharmaceutical work would realize the work of this institute to them not only professionally, but from a selfish viewpoint, there would be no difficulty in obtaining the million dollars which I have in mind. Of course, we will take less than a million dollars, but we really should have that amount to provide the necessary funds to carry on the necessary work, only the necessary work, that should be done in this institution. A million dollars is not much money when you look at it from the viewpoint of interest produced from safe investments; one could not expect to obtain more than thirty-five or forty thousand dollars, and half of that from five hundred thousand dollars.

"The ASSOCIATION should have, to continue its work here with some little expansions, certainly from fifteen to twenty thousand dollars a year. That is not a great deal to provide when one realizes the great value of the services that can be given by this institution. I do want to impress upon you that this building is more or less self-supporting at the present time, but barely can get along.

"I have already spoken about the kind of work that is going to be done, that is from my viewpoint, in this institution; it is going to bring about the correlation of the professional work in pharmacy, which will result in saving it from some of the influences that are responsible for the present unsatisfactory conditions in pharmacy. I hope to see there a representation of all the professional and ethical bodies. I mentioned them by name yesterday, the colleges, law-enforcement officers, the U. S. P. workers. What use they make of it will be a matter for their respective organizations to define, but they should make some use of it.

"Referring to the material value of the institution, when you think that millions of people will pass over the new Memorial Bridge, through this new boulevard right past our fine building, and will become interested in what it represents, and many of whom will visit it and find out that it represents pharmacy, and then they learn what pharmacy really means as a professional and scientific undertaking, it will create a reaction in the public mind which will reflect beneficially in a material way upon all phases of pharmacy, particularly those who manufacture pharmaceutical products. The pharmacists cannot hope to maintain the special privileges and keep the prestige that the professional aspects of the calling give them unless it is justified in some way. Some of our pharmaceutical houses spend half a million dollars in propaganda work a year. I feel that it would be very low propaganda cost to spend five or ten thousand dollars a year for five or ten years, to develop this institution which is so obviously of great material advantage to them.

"I want to impress upon you that this building has been built at a phenomenally low cost. The reasons for that are several. One of them is that it was constructed in the time of depression, and the other one is that all of those who were interested in the project made good bargains, not only in purchasing the land but in purchasing the building material. I don't think it would be an incorrect statement to say that that building and the land we own, which cost us five hundred and some odd thousand dollars, couldn't be reproduced right now for less than a million and a half. It is worth several million, and in a few years it will be worth many millions. I hope you don't think my statement is an exaggeration. It is the only site left in Washington that would be available for a structure of this kind. I am telling you that, not with the idea that we should take any advantage of the opportunity, and to make money off the project, but it does give one a thrill to feel that a value is represented greater than the cost, in something which we own.

"Regarding the operation of the building—perhaps some of you might think that this building is too big for the headquarters, or too costly to operate. The economy of operation of the building is so low that I doubt if an ordinary 3-story dwelling could be operated on less cost. Practically everything is automatic. Those automatic materials were bought at low cost, the furnace is automatic, oil burning furnace; watering the lawn is automatic, it didn't cost a great deal to install it, but it would have cost a tremendous amount of money to have kept the lawn watered. We were obliged to have the lawn, otherwise we wouldn't have the site, because we could not have received any coöperation through the Fine Arts Commission, and the Parks and Planning Commission, if we had not yielded to their desires that the location of the building and its surroundings should be developed in accordance with their wishes. There are no elevators, no loafers and anything of the kind to eat up the funds which are available.

"I wish to impress upon the members of the AMERICAN PHARMACEUTICAL ASSOCIATION that this doesn't happen to be Dr. Kelly's building or Hilton's or Swain's or mine, nor does it belong to all four of us. I could give many other names; don't get your feelings hurt now because I didn't mention your name. We turn it over to all of you. We feel that you should take more interest in it than you have. I mean more effective interest. We all appreciate, and we thank all who have worked and have been active in this work. It has not been the four of us, it has possibly been a hundred of us all together, and a limited number have borne the principal burden, perhaps, and we enjoy and appreciate your congratulations.

"I wonder if you don't sometimes forget that after all, you should be congratulating yourselves because it is your property. I mean by that, that in the future I hope that many hundreds of you will keep the Institute in mind. I hope you are sold on it, I hope you don't think that it is an impractical kind of a thing, that as I said in my address the other day, it is a white elephant on the hands of the AMERICAN PHARMACEUTICAL ASSOCIATION. It isn't at all. It is its savior in a sense. I don't mean that it wouldn't live without the Institute but it comes at a very fortunate time, and it is going to help the AMERICAN PHARMACEUTICAL ASSOCIATION do the work that it needs to do to save pharmacy.

"We hope that more of you will begin to think in terms of personal position, and begin to do those things which are needed to be done to consolidate and secure the effort which we have made. I don't only mean in obtaining money, but in selling yourselves on the value of the Institute and selling other people on its value. If you will do that we will get the necessary money, and we must have it.

"In line with that thought, I am asking a certain number of gentlemen, and I would be glad to hear from any of you who would wish to speak from the floor, to speak your minds, and give us your thought in regard to the building as you see it now. You probably have already visited it, I am sure that the men that I will call on have seen it. I hope you will tell us, or tell the ASSOCIATION what you think of the building, and its value, and its prospects. I hope you will tell us what you are going to do to make it fulfil its mission and its opportunity.'

Chairman Dunning called on **Secretary E. F. Kelly,** who spoke in part as follows:

"I attempted yesterday to express in a few words, at the dedication exercises, my concept of this building and what it could do for this profession in which we are interested. I believe the time has come, from my experience, when consolidation and mutual interest between groups having the same purpose are absolutely essential. I think we have to build some place, and there create a force and influence which represents the combined influence of our whole body in any purpose which we have in mind. I am one of those who believe fully, that, if we wish a position as a public health group and as a public health influence, we have to render the service which goes with that title. In other words, we pay a price for any position that we occupy.

"Furthermore, I believe that we have reached a place where coöperation between all public health groups is more essential than it has ever been heretofore. I believe that the better practice of medicine is as much to our interest as I believe the better practice of pharmacy is of equal interest to the medical men. I believe, in turn, that all such coöperation is in the interest not only of our profession but in the interest of the industries which support them.

"As far as I know there is no profession that hasn't some industrial background. You can judge from the Chairman's remarks that it is somewhat necessary at certain times to have money, usually furnished by some industrial effort, but it is a fact that all of these professional industries have to coöperate on mutual bases and to help the whole cause. Most important of all

coöperation and mutual interest between all groups concerned with public health will be to the public benefit and well-being which, after all, is the prime consideration.

"I appreciate very much the references that the Chairman has made to the work that the ASSOCIATION can do in that building. Now, it is a fact that we can carry on the routine operations of this ASSOCIATION in the building because fortunately we are tax exempt, which means a great deal. It rests with the pharmacists of this country, to say how much farther these efforts shall go, and certainly they will have to go further than we have been able to carry them heretofore, if we wish to bring about the program which I have just referred to, and which I know every one in this room is just as conscious of as I am.

"Several years ago it was my privilege to have something to do with increasing the physical facilities of a certain school of pharmacy, and previous to that I was so fortunate or unfortunate as to build a home, and after each step I said, I will never do it again. When I built one home, I decided thereafter to rent, and after I had gotten through with the school, I thought I was fed up with building and all efforts of this kind. We have just struggled through another great building effort and you have heard our Chairman ask for a chance to go on and do something else. I, apparently, or the group apparently, never know when to quit, but there is an impellent urge to complete a thing of this kind and put it on the very finest basis possible. We can operate that building so inexpensively that no type of advertising, in my opinion, no type of propaganda, and I use those words in the proper sense, could do for us what that institution can do; may I give a very brief illustration.

"It was my privilege to appear before a very important Government commission about a year ago, when several men interested in this project were there. Incidental to that discussion I referred to the United States Pharmacopœia, and one of the most prominent men present asked me, 'What is the Pharmacopœia?' That didn't shock me particularly, because I had had that question asked many, many times. After I had explained the Pharmacopœia and the National Formulary, this man said, 'I want to ask you another question, what does the Government give you for the work?'

"I said, 'Nothing.'

"He said, 'No, you don't understand me. I don't mean for the building and all that, but for such operations as this.'

"I said, 'Not a cent.'

"He replied 'And yet you say these standards are used in the enforcement of Government laws and regulations?'

" 'Yes.'

"Then he said: 'That is one of the finest public services I have ever heard of, and I think you people are just foolish not to tell the American people about it and let them know that you do that kind of work.'

"We hope in this building to illustrate pharmacy, and I believe it is going to do that. I have been encouraged to watch people come up close enough to read the inscription on the building, and they say it ought to be more easily read. I don't think so, because the closer they get to it the better it is.

"I am happy to have given the work I have given to that building. Nobody owes me any sympathy at all, because of any work I happen to have put into the cause. It is one of the most fundamental things that we could possibly do, and I say that, because from every angle it is going to help this industry and this profession.

"It has been my privilege to serve in almost every division of pharmacy. I think I have worked actually in all divisions of pharmacy, possibly with the exception of a wholesale house. I am looking forward to that experience before I die. I say this just as much from the standpoint of the manufacturer and wholesaler as of the practising pharmacist—that if we don't elevate this profession and this industry with which we have our names and reputations connected, nobody is going to do it for us. Don't sit around and wait for the United States Government or anybody to promote our cause, if we are not worrying about it.

"I will never forget the story of the mother bird, who came home and the little birds said 'We have to move,' and the mother said 'Why?' 'Well, the farmer is going to call in all of his friends to cut the wheat.' The old lady said, 'Well, don't worry about that.' A few days later she came home and they said, 'We have to move.' She wanted to know why, 'Well the farmer

came down and expressed a great deal of dissatisfaction with his friends and he is going to have the neighbors help him.' But the mother bird said, 'Well, we won't worry about that.' A few days later the little birds said, 'Mother, the farmer came and said the rest of the country could go to thunder, they are going to cut the wheat themselves.' The old lady said, 'Now it is time to move.'

"My opinion is that, if we want to improve our calling, we have got to do it for ourselves, and I am going to put everything I can into that objective."

Chairman Dunning thanked Secretary Kelly and called on **Prof. Charles H. LaWall** for a few words; he said in part:

"The Headquarters Building, in my opinion, is symbolic of what pharmacy can do, and will do. It is a torch to light the way to future things. It is a symbol of idealism which I believe can be realized if we put it up to the pharmacists, who must start from new foundations, you might say, on the road toward success. We must cast aside some of our misbeliefs, we must start toward new goals, but with the inspiration of the building which we now have we cannot fail in our ultimate purpose.

"I believe that we can build up a membership of more stable and interested individuals than we have ever had before. I believe that we can center certain activities there which have never before been recognized to be in existence, and I look upon it as the home of American Pharmacy for the future."

Chairman Dunning called on **R. E. Lee Williamson** who responded, in part as follows:

"It might be presumption for me to say very much more than has been said about this building both yesterday and to-day. But there is in me a respect for the emblem of ambition in that building. A conception of the idea was made known to me in the very beginning and the thought of the proposed effort made such a tremendous impression upon my imagination and so fired my respect and love for pharmacy that from that day until yesterday it has never been out of my mind.

"I played a very small part in the gathering together of that which was necessary to make the building. I watched it grow, I watched the plans they were drawing. I observed the insistent effort of Dunning and that of Kelly and their persistency as they pushed on toward this ultimate goal. I saw the day the ground was broken, the first shovel full of dirt that was dug. I came out here whenever I was in Washington, to take a look at what was going on. Some nights I came out and sneaked into the building and was held up by the watchman, and then got the watchman to turn on the lights that there I might revel in this dream that was coming true. As it went along I gloried in it, and all the time there was pictured in my mind that pharmacy had grasped an opportunity, and that it was building something that was going to do in my humble opinion, more for the profession of pharmacy than has yet ever been done for it. I am still of that opinion. I think this building is an emblem, an emblem of Pharmacy. It will be in the eyes of the public, the eyes of the people of this Great Nation and of the world. This building, in my mind, is like the cross to the Church, or the flag to the nations, and it is now our obligation to keep this emblem of Pharmacy unsoiled.

"Just as we kept the cross from being desecrated, and just as we kept the flag from being insulted, we will do that with this building, and in the pride of our hearts and the love of the profession, I know that this group of men will not fail to carry on high this building, the emblem of pharmacy, down on through the ages. It can mean to pharmacy and it does mean to pharmacy, the greatest step forward that it has every attained. It means that if properly directed and properly held on high, that the public will become more and more conscious of the vital importance of pharmacy in the public health scheme. Carry on we must, and with this group of men here it will go down through the ages in the history of pharmacy as a wonderful accomplishment. I agree with Chairman Dunning that at no time in the future will the men of pharmacy let go this opportunity, but will force it on and support it as fully as it has been supported up to this time.

"I have, absolutely, an abiding confidence in that effort and if there is anything again that I can do in my humble means, please don't hesitate to call on me, because I will do it."

Chairman Dunning replied that he would remember. He called on **Henry D. Faxon** of Kansas City, who spoke in part as follows:

"Every one who attended the dedication yesterday was very much impressed with the sincerity, the dignity of the speeches, of your presiding officers. I never heard anything better

than the address of President Swain; my grandson said, 'I love Doctor Kelly,' he knows what he is talking about; I have heard talks of symbolism, and the thing that struck me was that you were exceedingly worldly wise in your symbolism, that you have done a thing which captures the imagination of people, that places you in a very practical sense as leaders in the pharmaceutical world.

"Mrs. Newcomb was kind enough this morning to take my grandson on a sight-seeing trip, and she to-day was telling me they passed the Institute of Pharmacy, and the kid, said, 'There is the Institute of Pharmacy' and some lady on the front seat turned around and said, 'Well, think of that, the nerve of those people.'

"Now that is what you need to place yourself in the public eye. I have been a member of the ASSOCIATION for many years, I never have seen you, never have met you, and I am somewhat like a man who has not been to college, who always paints too lovely a picture of the college university training. I have always compared my scientific men with those that have largely associated with you. Unfortunately, my life has been laid strictly in the commercial field and when I received your letter, Dr. Dunning, I tried to think of what I might say that would be of some service to you, and still not be along the regular lines of paying homage to your beautiful building. You gentlemen have all faced the trite question, how far persistence can go, and still live, and it is an old question. It seemed to me that it is fair to say that life depends on two phases; one through intensity on one object and one through the aggregation of other material. It seems to me that to keep from being static you must add to your activities, and there is no use of conducting pure pharmacy if it doesn't finally lead to the goal of making a human life better.

"Dr. Stanbury yesterday spoke about the changes in pharmacy and Mr. Weicker spoke of it also. To my mind, pharmacy must concern itself with distribution, otherwise it will fail in serving the public, while at the present time pharmacy is represented by drug stores wherein there is conglomeration of all kinds of merchandising, still somewhere there should be a place to set off the ideals of pharmacy. You gentlemen have sought perfection, that is very evident in looking at this building and in watching your dedicatory exercises. There must be improvement in distribution and in all divisions if pharmacy is to continue. It seems to me that if you are going to be all-embracing, you must face the situation on down through to the consumer. It seems to me that somewhere your plans must include the study of distributing the products which are made by the manufacturers or compounded by you, on to the ultimate consumer.

"I did not hear Dr. Dunning's first remarks, but I want to say, I have high regard for this organization and that anything I can do, I am willing to do. I am a wholesale druggist and don't know how well the wholesaler fits into the picture. I asked Dr. Newcomb how many members you had among us, and he gave a very limited number. It occurs to me that you must get us in, that we should work in harmony with you and you with us; that there must be coöperation of the trade and the profession, and so far as mine amounts to, I pledge you my efforts. Thank you."

Chairman Dunning thanked Mr. Faxon and stated that many of the ideas presented by him have been discussed, and this building represents the aspiration which you have in mind in correlating the professional and scientific endeavor of all phases of pharmacy and of those who are interested in the profession and advance of pharmacy.

He was very much impressed by the remarks of the grandson and not at all critical of the statement made by the lady in the bus. He well understands why she would make such a remark, it is all because we have lacked nerve, and here is a little demonstration. If explained, the lady would be surprised if we tried to teach her what pharmacy represents to her and to the world at large. Pharmacy must get rid of the inferiority complex. There is no activity that is more essential to the world's welfare than our own, so long as drugs are used for the treatment of ills. If we stop using drugs we are of no consequence but we represent the science and knowledge of drugs. I am not talking about we retailers, alone, I am talking about pharmacy in general. After all, we are all one body; whether we are in the manufacturing field, wholesale field, all must have the same knowledge to deal with drugs.

Chairman Dunning called on **Dr. Ernest Little** who responded:

He was impressed by the story that Dr. Kelly told, and it recalled to him a story that he heard just a few days ago about a bird, which bird had developed the ability to fly backwards, and even among birds that is a rather unusual procedure. When being asked by one of its asso-

ciates as to why it saw fit to fly in such an unusual manner it replied that it wished not only to know where it was going, but that occasionally it was interested in knowing where it had been. The speaker continued:

"It seems to me that we, like this very wise bird, could well spend a few minutes at this time looking backward. If we do so, we shall see a number of exceedingly active, capable, conscientious men concerning themselves about raising funds for a pharmaceutical headquarters building in Washington. One of the most active of this group, and it would be impossible to name all of them, was Dr. Dunning of Baltimore, ably assisted in the earlier years by Dr. Newcomb. These men worked conscientiously over a long period of time until to-day we have the fruits of their labors for pharmacy and pharmacists to enjoy in all the years to come. The building is indeed a work of art and is a credit to the pharmaceutical profession.

"To-day we meet to rejoice in its successful completion and to concern ourselves as to how it can best be used for the profession of pharmacy in the years to come. We all realize, I am sure, that the contribution which it is to make to the profession of pharmacy depends, not so much on its beautiful exterior, as it does on the activities which are to be carried on within the building. It is a satisfaction to learn that Dr. Dunning and his associates do not feel that their labors are ended with the completion of the building but that they are now starting a million-dollar endowment campaign for the support of this magnificient structure. I am sure that sincere thanks of the pharmacists of the country go out to these men for work which they have begun and for their continued interest. I have been called upon unexpectedly as a representive of the American Association of Colleges of Pharmacy to comment as to the constructive uses which could be made of this building. Although I am president of that association I do not feel that I have the authority to attempt to give you the views of the Association. I can assure you, however, that the pharmacy colleges of the country are anxious to make as extensive and constructive use of this building as possible and are anxious also, to coöperate with the pharmaceutical organizations in enabling it to make its maximum contribution to the profession in which we are all engaged.

"I can look ahead to the not distant future when all the pharmaceutical organizations of the country will or should be housed in this building. Constructive planning of a comprehensive nature would be much more possible under such conditions than it is to-day. It would be well if the American Association of Colleges of Pharmacy could afford to make use of a permanent secretary whose office could be in this building. Probably the Association will not be able to do this at the present time or possibly for some time to come. The American Association of Colleges of Pharmacy rejoices with you in this advancement for pharmacy. I assure you of the continuation of the Association's interest and support. We shall deem it a privilege to go along with you every possible way."

Chairman Dunning called on **President C. T. Gilbert,** of the National Association of Boards of Pharmacy. He spoke in part as follows:

"I am pleased that so many of the speakers have spoken their thoughts on this building, all of which I endorse, so that I won't have to repeat them, but speaking for the National Association of Boards of Pharmacy, I believe that no association in this group more fully realizes the benefits that will accrue to that Association by having its permanent office in the Institute of Pharmacy, being the association of licensing and enforcing officials, the benefit of being close at hand and in touch with the governmental affairs, having the advantage of the statistical reports that will be available in this building, it will be of great value to our association.

"We have gone a little further than the American Association of Colleges, and it may please you to know that the executive committee of our association has already taken steps to soon occupy that building with our main office there. On Sunday evening in this hotel, the Executive Committee passed a resolution that our office would permanently so be established in this building by May 1, 1935, if possible, and not later than January 1, 1936.

"I assure you, Dr. Dunning, that the National Associations of Boards of Pharmacy are in full accord with everything that has been done in the erection of this building and that we are with you in spirit and also in action."

Chairman Dunning called on **Dr. R. A. Lyman;** he was of the opinion that Dr. Little was to speak for our Association, and all he could say would repeat what he had said and this expresses the sentiment of the American Association of Colleges of Pharmacy. He added:

"We are very happy at the completion of the building. The teachers and students in this

country had a large part in the collecting of funds and the making of the building possible. It is true that in any line of work, the educational institutions are the institutions which have ideals, which should have the visions and should teach the coming pharmacists of the country what those ideals are, and do everything that we can in a teaching way to put them into effect, and maintain a high standard of pharmacy.

"We are very very happy, the men who are engaged in educational work, because we at last have reached a point where the colleges of pharmacy have taken their place among the academically rated institutions of the country. Two or three years ago we went to a minimum course and when we did that we joined the great family of colleges.

"We want to do our part, working with the other phases of American pharmacy in this national work. We want to do our part in maintaining the dignity of our profession, and we are happy that we have this beautiful building representing the highest ideals of pharmacy.

"I like especially the things that Mr. Faxon said, and I am sure, Mr. Faxon, that we educators will bear in mind the things that you have said, and we will do all that we can to see that every phase of pharmacy is represented in our teaching institutions, so that the high ideals which you have in mind may be incorporated along with our scientific ideals."

Chairman Dunning introduced **Secretary Ward** of the American Association for Advancement of Science. He said in part: "I think that I may say with perfect correctness, that the American Association for the Advancement of Science represents not only the largest and the only nation-wide organization dealing with all sciences, both pure and applied, but it is also the oldest with a continuous history in this country of ours.

"We celebrate this year, not by any form other than that which accompanies our regular meeting, the hundredth formal meeting of the organization. That does not mean quite a hundred years of history, because we frequently have met more than once in a year, and during the Civil War for example the meetings of the Society were not held. That organization is sufficiently old to have seen all of the structures that in a beautiful array run along the Avenue here for a distance of nearly a half mile. It still remains in three tower rooms in the old building which was erected in honor of James Smithson of England, who gave his fortune to the United States for the advancement of science, without restrictions and without qualifications.

"And for one, speaking really for the whole organization of 18,000 members, I have seen enough in the last three days, that I have enjoyed with you through the courtesy of your President and Secretary, I have seen enough to be proud of the fact that the AMERICAN PHARMACEUTICAL ASSOCIATION is one of the affiliated organizations connected with the American Association for the Advancement of Science. The thing that impressed me most definitely was, really not the beauty of that building which you put up, nor the general dignity and impressiveness of the accommodations there for the work you represent, nor yet the character of the persons who in considerable number I have had the privilege of meeting here, although all of those things made an impression on me, but the thing that impressed me as one of those who has spent forty years and a little over in teaching in the universities of our country was the thing that lay behind and underneath that building.

"I wonder if you thought of the fact, as you might very easily have done if you had known the history of these buildings along here, that your building is unique. It was not built by virtue of a grant from some foundation, which you sought and obtained as you might have done so very worthily for this purpose. It was not built out of the donations of some single friend. There it stands as a record of thousands of your members who pledged themselves in large and small sums for the building of a home for the profession that you represent.

"It has a substantial foundation in the personality of the profession, and not in the beneficence of some foundation or will to do honor, and to one who has been a teacher, that is after all the most substantial foundation upon which anything can be built.

"I have no doubt for a moment but that you will go ahead with the larger plans which Dr. Dunning has suggested and develop them successfully. Men who contribute in such sums and such numbers to the purpose of the profession with which they are connected are looking forward and will not turn back, and the American Association for the Advancement of Science wishes you that full and abundant success that your devotion merits and will secure."

Chairman Dunning thanked Dr. Ward and referred to having introduced him as our

neighbor across the street. He was informed that this was not the case, but he was convinced that all recognized in him a neighbor.

Chairman Dunning asked **F. H. Freericks** to comment.

Mr. Freericks referred to the time of selection of the site when Cincinnati, the valley from which he hails took a very interesting, a very interested and a very determined position. The good people of Cincinnati subscribed one hundred and fifty thousand dollars on condition that the building dedicated yesterday would be located in Cincinnati. Few, if any other cities, were so determined, and expressing that thought, he knew the Chairman, and all of you, would realize how deeply at least he and others felt that such a building would include wonderful possibilities for the AMERICAN PHARMACEUTICAL ASSOCIATION. Mr. Freericks continued: "It was my privilege and pleasure to attend my first AMERICAN PHARMACEUTICAL ASSOCIATION meeting in Baltimore, in 1898, and I have missed but few of the conventions. I have felt for many many years that there would be nothing so helpful to American pharmacy, nothing that would bring pharmacy better to the attention of the people generally, and to the thousands of those who have neglected being members, that would justify such a building as we now have here in Washington.

"May I, being wholly unprepared, say on this occasion, that yesterday, sitting there in front of the wonder-building, which is a monument, always will be, to American Pharmacy, I never listened to a more inspiring address, a more appropriate address, to a more statesman-like address, than the one presented by President Swain. It was so fitting, it went so to the heart, it was so convincing."

Referring to a friendly remark made when introduced he said:

"Now I see, as I am sure you all see, and may I, before I say that, say that I have no grudge at all toward or against Dr. Dunning. I want to accept this opportunity to thank him in your presence for the wonderful work that he has done, for the work that he can be proud of to the end of his day, as one of the outstanding things in his career, and one of the outstanding things in American pharmacy." He continued:

"In endeavoring to find a thought that is practical in its application, after all that is what you are seeking, I believe on this occasion, something that might be helpful in the way of a suggestion or a thought thrown out, I see in the building dedicated yesterday by this ASSOCIATION, a milestone, the turning of a new leaf.

"I see with certainty that these thousands of men in American pharmacy who have neglected the professional side of their calling, will turn to it. I see in it the likelihood, yes the certainty, that there will come to this ASSOCIATION the petition, such as was indicated by our President in his address last evening, the petition of pharmacists that they might have the privilege of being members instead of being solicited for membership.

"I see in it, the issuance of statements, emanating from that center of pharmaceutical activity that will bring to the attention of the people, advancement in pharmacy, resulting in turn to a feeling in the American public, and in the mind of the American public, that a man who professes to be a pharmacist, and is not a member of the AMERICAN PHARMACEUTICAL ASSOCIATION, is a person of minor importance, and not of much worth in connection with his calling. I visualize that this condition is going to be brought about by the wonderful building and all that it represents.

"Mr. Chairman, I want to thank you for this opportunity and privilege of having said a few words. I had no reason to expect that I might be called upon, and for that reason I want to say in particular, and express how deeply I appreciate the opportunity of having had the privilege of saying a few words at this time. I thank you for what you have done for American pharmacy."

The Chairman said he hoped that Mr. Freericks would feel somewhat compensated for the loss that was incurred through him. He also desired to bring to his attention that the pharmacists again showed their nerve; *first*, they put up a building here, and, *second*, they turned down one hundred and fifty thousand dollars. He had a long list of interested pharmacists to whom he would like to extend an invitation to speak but time was limited because of other business, so the number would have to be restricted. He would like to hear from State chairmen.

Dr. R. B. J. Stanbury said he had listened with a great deal of interest and it had certainly given him great inspiration. He said a great thing had been accomplished in the building and he felt that it would be the beginning of a new era for pharmacy in this country. He and his colleague, Mr. Jacobs, appreciate very much being present at this convention. The annual convention of

the Canadian Pharmaceutical Association will be held in the city of St. Johns, New Brunswick, August 6th to 9th, and he extended to this ASSOCIATION an invitation to send representatives to that meeting, and for all a very cordial invitation to be present. They would be delighted to meet and greet the visitors.

Secretary Jacobs, of the Retail Druggist's Association of Toronto, Canada, said he had enjoyed very thoroughly this convention, and appreciated this opportunity to say what a pleasure it had been for him to be here. The convention held in Toronto a couple of years ago was a great inspiration to Canadian pharmacists and stimulated the professional side of the business considerably. He wished continued success with the building project, and also all its hopes. (Both Dr. Stanbury and Secretary Jacobs have been members of the AMERICAN PHARMACEUTICAL ASSOCIATION for a number of years.)

Chairman Dunning said he was now going to introduce a gentleman, who had been particularly active in the work that had resulted in the establishment of the American Institute of Pharmacy. He had not been heard from so much during the last few years, but in the beginning of this undertaking, he was most active, as many remember, in developing the necessary publicity, and directing the educational procedures that stimulated the interest in the project, and made those who afterward supported the building, minded to give up their worldly goods for a good cause. He introduced **Dr. E. L. Newcomb,** of the National Wholesale Druggists Association, who spoke in part as follows:

"I am very happy to have an opportunity to say a few words to you at this time, on the subject of the afternoon. It is true that I have not spoken during the last three or four years on this project. That is not because the subject had become of less interest to me, but because it seemed to me that we were making very rapid progress, and that the time would soon come when it would again be necessary for us to again inject into those far-sighted plans of Dr. Dunning, the determination to carry on. Dr. Dunning has outlined to you during the dedication exercises, in a general way, his vision and plans for this building, for the services which it may render to American pharmacy. I, like Dr. Little, believe that it is an opportune time for us to look back before we again look ahead, just for a few years, and measure our progress.

"This vision of a pharmacy building, of course, is something which is many years old, possibly older than I am. I have been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for just about thirty years, and it was one of the subjects which I heard discussed during the first years of my membership, but it was not until a few years ago down in North Carolina, up on top of Mount Mitchel, that H. A. B. Dunning unfolded his vision, and it was there, over a mile above sea-level, that this magnificent building was first seen, and Dunning is the man that saw it at that time. I did endeavor to help him, and I am going to continue my endeavor to help him. As we chatted over the subject up there on top of Mount Mitchel, we saw something which we tried to place before all of American Pharmacy during the succeeding years, when we were endeavoring to raise a fund of a million dollars, and I wonder to-day if you have that picture, because I think it is essential in order to have that building bring the results that we have a right to expect.

"The results have partly been attained. As we looked over the landscape from the top of Mount Mitchel, we saw American pharmacy as it exists in this country. Down in one of those beautiful valleys we saw the AMERICAN PHARMACEUTICAL ASSOCIATION, representing four or five thousand members from all branches of American pharmacy. Down in the other direction, we saw another army of American pharmacists, the N. A. R. D., with fifteen or twenty thousand members, the retail pharmacists of this country; and in another direction we saw the National Association of Boards of Pharmacy, and in another valley the American Association of Colleges of Pharmacy, and in another direction the National Wholesale Druggists' Association, and again the Federal Wholesale Druggists' Association, and we looked further, and we saw another great army of pharmacists, the American Drug Manufacturers' Association, and in another direction the American Pharmaceutical Manufacturers' Association, and again the United Medicine Manufacturers Association, and in another direction the Proprietary Association.

"They are all great organizations rendering valuable service to their respective groups; but as we looked further, what did we see? We saw that none of these groups was accomplishing what they hoped to accomplish for their respective organizations, and we asked ourselves the question as to why these accomplishments were not being secured. Our analysis was that funda-

mentally all of these groups were at heart dependent on the success of pharmacy, and pharmacy as a profession, and that there was need for the protection, for the development, in order that American pharmacy might render its full and most valuable service to the American people, that there be some coördinating influence, some correlation between these different organizations, and that was the fundamental thought back of establishing an Institute of Pharmacy, which might represent all, and which might stand for the highest ideals of American Pharmacy.

"The first step has been taken. The Institute materially has been created, the personnel is back of the project, and as Dr. Ward said, with a backing of sixteen thousand individuals, you have a movement started. You have something which hardly any other professional organization in American Pharmacy can boast of.

"Now, what are we going to do with our material equipment? That is the next proposition, as I see it. I did not hear what Dr. Dunning said at the opening of this session. We have discussed it, and I think our views coincide, and briefly, they are this:

"The Institute of American Pharmacy to-day needs at least a million-dollar endowment fund, possibly more, and I want to say to you that a million-dollar endowment fund for the American Institute of Pharmacy is yours for the asking.

"Many people say to-day, 'Well, these are hard times, it is impossible to raise funds.' That is not well founded. Take any issue of 'Science' and look through it, and see the billions that are left and donated and contributed even during these hard times for real worth-while scientific professional work. I do not begrudge the medical profession a single cent that they obtain, but they have obtained millions that were paid by pharmacists and the only reason why pharmacy has not secured many of the gifts to which it is rightly entitled is because we have not had more nerve. It is up to the AMERICAN PHARMACEUTICAL ASSOCIATION, I believe, to take the lead, and to back up the present committee or any new committee which may be created, to establish an endowment of at least a million dollars, to maintain this institution in order that it may render efficient service.

"Now, what are some of those services which this institution may render? In the last *Headquarters Building Bulletin* appears a review of eight pages, wherein you will find enumerated some of the services and features which an institution of this kind should and can render—not alone for the protection of American pharmacy, but for the protection of the American public, because that fundamentally is the only cause for pharmacy to exist, or for this institution to be maintained. As Dr. Dunning said, if the people stop taking drugs and medicines, there is no reason for us to exist.

"Now, a word or two about the various branches of American Pharmacy, and their relation to this institution. The AMERICAN PHARMACEUTICAL ASSOCIATION is fundamentally the one organization in this country with which all branches of American pharmacy may directly or indirectly be affiliated. It is the one association in which those who are members of manufacturing concerns, wholesale concerns, retail distributors, boards of pharmacy and colleges, or other divisions, may become members. We have to-day a great need for the AMERICAN PHARMACEUTICAL ASSOCIATION, a greater need than ever before in the history of American pharmacy. Right to-day over here in the Department of Commerce, administrators and deputy administrators shake their heads with doubtfulness when the subject of professional pharmacy is referred to. They do not fully appreciate that pharmacy is rendering a professional service, and pharmacy is a profession. Please do not confuse ethics with professionalism. The commercial activities of our present-day pharmacists are not non-ethical, they may be perfectly ethical. Many of them are commercial, and some have become so extreme that they have over-shadowed our professional services, and tended to mislead the American public in their appreciation of the value of the professional services which pharmacy renders.

"In my judgment the American Institute of Pharmacy, with an endowment of a million dollars or more, may very adequately maintain a service bureau to present to the American people, truthful, up-to-date information on the professional aspects of pharmacy. That Institute, functioning as it should, with research laboratories, may at frequent intervals issue reports from these research laboratories on new products which are used in medicine. It may reflect honestly the views of ninety per cent or more of American pharmacy, which is truly and sincerely interested in scientific professional service.

"When President Roosevelt said that ninety per cent of the industry of this country

wants to do the right thing, he might also have said that ninety per cent of our professional organizations are high-minded and are determined that the highest ideals of the professional practice shall prevail. We have in our professional practices, dentistry, pharmacy and others, a minority who will be willing to lower the value of that which the majority stands for, and it is that minority in pharmacy which has tended to belittle the work of the ninety per cent, because we have not had an institution which will give to the public an understanding of the service of pharmacy.

"Only last week a member of the Board of Regents of one of our great states said to me that he felt it might be a mistake for his state to adopt a four-year course in pharmacy, I replied: 'I am certainly surprised to hear you speak that way. You are a graduate of Harvard University, you have sent your son to Harvard, but you don't think that a pharmacist needs to have a simple undergraduate course as a requirement.' Finally he said, 'Maybe you are right.'

"We are developing gradually, we are coming to a point of view which is more in line with the ideals which we hold, and unless we do aim for those ideals we are not going to make the progress that we should make.

"It doesn't make any difference whether an institution is engaged in manufacturing a proprietary medicine or prescription specialty, or U. S. P., or N. F. preparation, or in wholesale activities, the welfare of that institution is determined and dependent upon the future welfare of American pharmacy; every institution that handles or manufacturers or deals in drugs or medicines in any manner, shape or form will be benefited in proportion to the success of this Institute of Pharmacy.

"I am of the opinion, that when this new campaign is started for an endowment, you will see a better response from wholesalers, because I believe that the last nine months have demonstrated to American pharmacy as nothing else has ever done, that we have got to stick together, and unless we do support professional pharmacy as the heart of the entire drug industry, and back it up in every way, every one of our interests are jeopardized. If I can render any service in raising another million dollars, I will do it, and again talk to every college of pharmacy in the United States, and to every state association and local association, if necessary. This project, in my judgment, is worth a lot to the wholesale druggists, to every retailer and to every other branch of American pharmacy, and we must keep it on a high plain.

"I am glad that the American Institute of Pharmacy has become a reality, in this city and on this site. Chicago wanted it, Cleveland and Cincinnati wanted it, but they now realize that here is the place for it. I am glad the building is in Washington, that is where it should be.

"It is up to every branch of American pharmacy to back it up, I hope what has been said here to-day, whether you be retailer, wholesaler or manufacturer, it will cause you to leave this meeting, determined that when you are called upon to do your part, you will do it.

"I am glad that there is a stenographer here, because the record of this meeting, and what has been said by Dr. Ward should be broadcast as one of the finest pieces of publicity, throughout the entire length and breadth of this land. Thank you."

Chairman Dunning said he would call on just one more gentleman, for a brief talk and for a special reason.

"I came over here to Washington eleven years ago to meet the Executive Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION to explain some of the remarks that I had made in a public statement in the *American Druggist*. I won't go into detail in regard to it. After talking an hour or more before the Executive Committee, and not making what I thought was satisfactory progress, in convincing the members of the possibility of carrying this project through, I woke up and in a rather disturbed state of mind, I then, again, made a few dynamic remarks, which I regretted. Mr. Walton arose and cleared the atmosphere at that time and possibly the story might have been changed if he had not done so."

Mr. Walton said the Chairman surprised him as he had no idea of being invited to speak; he did not want to take direction from the Chairman as to what he should say, but would tell the story, if there was no objection.

"I rejoice with you, in being present at the dedication of this wonderful building. It has been a matter that has deeply rooted in my heart. I hoped that in a small way I might do something to bring this about.

"Fortunately, I happened to be in a situation one day ten or twelve years ago, to which

Dr. Dunning referred. One of those situations which might well be characterized as the newspapers do in pictures, 'When a Fellow Needs A Friend.' That was the occasion of the meeting of the Council in this city, after I had been elected chairman of the House of Delegates, and I was invited by Chairman Beal to attend that meeting for another reason. I sat through the discussion of the meeting in one of the hotels of this city, when Dr. Dunning came in and made known his plans for the development of this building.

"Also, it was the occasion when the Council was called upon to decide whether or not they would accept that very generous offer from the American Druggists' Fire Insurance Company, or whether they would have a building of their own. This matter was discussed all morning. I was not called upon to say a thing, but the consensus of opinion seemed to be at the time of adjournment, that the question had better be put up to the ASSOCIATION for decision.

"Immediately after coming to the afternoon session Dr. Beal invited me to say a few words. He said that I had been listening to what had been said and asked what I thought about it.

"I said what was in my mind, and it was this: 'It seems to me that the Council does not have the courage of its conviction. From what I have heard this morning all of you seem to think that we ought to have our own building.'

"The result was that the action of the morning was rescinded, Dr. Dunning with his indomitable will and energy started in to give more reasons why we should have this building of our own, and as a result to-day we have this beautiful building. I am very glad that I have lived to see the day when it was erected."

President Swain thanked Chairman Dunning for this highly interesting, and certainly a deep and stimulating program. He presented to him and all others who participated in this afternoon's session his very earnest and very deep and sincere appreciation.

Mrs. Lyman F. Kebler was presented. She spoke in part as follows:

"This is a great privilege to speak before you. Year by year, day by day, we make history. Some of our history is recorded and some of it is not. We happen to have a book with a record of the Women's Section, and a gavel of historical value. I have come before you to to ask that in the interim of the meetings, we may have a place in a case in the museum of the new building, to place this book of records and this gavel.

"I want to express appreciation to Dr. Dunning for coming before the group of women in Des Moines and giving us the opportunity of contributing collectively our money to this wonderful building. We are proud of the building and are planning to carry on and hope to meet in Portland. I thank you for this opportunity, and assure you that with the opportunity comes responsibility, and we are going to do our best to meet that responsibility. Thank you."

President Swain introduced Frank L. Coniglio, representing the Student Branch of the University of Florida. He briefly referred to the work of the Branch and pledged its members to support the ASSOCIATION in its efforts.

G. G. Campbell, of the Student Branch of the University of Pittsburgh, reported on its work and expressed his pleasure because of the opportunity of being at this meeting.

President Swain introduced E. Fullerton Cook, who, he said, would discuss a forward-looking constructive project.

Before presenting his subject the speaker referred to the inspiration and enthusiasm felt by the pharmacists as this magnificent Headquarters building was being dedicated. He thought of what this would have meant to the fathers of American Pharmacy, of the AMERICAN PHARMACEUTICAL ASSOCIATION, if they could have been present. It had been his privelege to know intimately many of them and he referred particularly to his association with Professor Remington and conversations with him on the future of American pharmacy.

"The time has come," he said, "when with this magnificent background, with this perfect setting, with this strong organization, to give us the opportunity to plan and organize the perpetuation, and the permanency of pharmacy."

He had given a great deal of thought to the problem of how to do this, how to practically establish professional pharmacy so that the laymen, the physician, the scientists, the educational world, shall accept without question the status of this great profession. He had taken up the subject with medical groups, both the American Medical Association and the officials of the American Hospital Association, of the College of Surgeons, so that the medical side might be thoroughly discussed.

As a result, he had asked the privilege of preparing a plan, a suggestion; it simply is a suggestion which was discussed before the Council of the AMERICAN PHARMACEUTICAL ASSOCIATION. As a result the Council appointed a Committee of men thoroughly imbued with the ideals of pharmacy to further study the question and report back to the Council whether or not this plan or some modified plan can be put into effect, not to-day but in the immediate future.

The author stated that there are two associated statements which had been handed out which are attempts to outline more specifically the services which professional pharmacy is rendering to-day, and for which there is a tremendous demand almost beyond the conception of many who are in pharmacy.

These papers are deferred, but the services referred to are, in part, brought out in the discussion. The *bulletins* are entitled "The Routine Service Offered by a Well-Organized Professional Pharmacy" and "Special Services Offered by Some Professional Pharmacies." ***Bulletin 2*** is made part of this report, as read:

A SUGGESTION FOR THE ESTABLISHMENT OF A NATIONAL COUNCIL ON PHARMACEUTICAL PRACTICE UNDER THE AUSPICES OF THE A. PH. A.

BY E. FULLERTON COOK.

It has been suggested that there be established, what has been spoken of as a "National Council on Pharmaceutical Practice," under the auspices of the AMERICAN PHARMACEUTICAL ASSOCIATION, and with the headquarters and secretary in the new A. PH. A. building in Washington.

The basic membership of this National Council would be from A. PH. A. members, by appointment by the A. PH. A. Council and specifically represent the following organizations:

REPRESENTATIONS.

The A. PH. A.—possibly five members, including the Chairman of the N. F. Committee of Revision, the U. S. P.—Committee of Revision, the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy.

It is also suggested that the following be invited to participate in an advisory capacity as auxiliary members:

The N. A. R. D. Committee on U. S. P. and N. F. Propaganda, the American Drug Manufacturers' Association, the American Medical Association (through either its Council on Pharmacy and Chemistry or Council on Medical Education and Hospitals), the American College of Surgeons—(this body establishes many of the standards for hospitals in the United States), the American Hospital Association, the Food and Drug Administration (enforcing Drug Standards), the Surgeon General of the Public Health Service, the Surgeon General of the Army (Medical Administrative Corps) and the Surgeon General of the Navy (Hospital Corps).

The larger group would be divided into three sub-divisions.

1. The professional pharmacist in retail practice, coöperating with physicians in general practice.
2. The hospital pharmacist.
3. Such action as might be found practicable in promoting professional pharmaceutical service in the United States public health, military and naval organizations.

All appointments to this Council would be made after consultation with and the approval of the group represented. The sole purpose of this Council would be the promotion of more efficient pharmaceutical service in each of the fields represented.

FIRST OBJECTIVE.

The primary objective would be to specifically study the needs of each field of activity and then prepare and announce to the Country the minimum specifications as to personnel, the physical equipment which should be provided to insure efficient service. The Council would also make a restatement of codes of ethics and practice, for each group as the basis for a high professional standard.

SECOND OBJECTIVE.

After developing and announcing the statement covering professional standards each group would endeavor to promote the adoption of what was believed to be a minimum standard in each field. They might proceed somewhat as follows:

GROUP 1—RETAIL PHARMACEUTICAL PRACTICE.

Suitable machinery would have to be set up with a secretary, so that established professional pharmacies throughout the Country might be given the opportunity to voluntarily "register" with this "National Council."

Such "registration" would require the setting forth, on a suitable form, of all essential facts about the professional side of the business, covering such points as:

1. The training and experience of the pharmacists in charge and doing professional work.
2. The character of the physical equipment, including stocks of drugs, chemicals, volatile oils and galenicals with their quality and preservation. Also how biologicals are kept, the kind of balances used, the sterilization equipment, etc.
3. A catalog or list of the books available in the professional library.
4. The character of the professional work done in the pharmacy during the preceding year and its percentage relationship to other departments in the same establishment.
5. The relative floor space devoted to the various phases of "professional pharmacy," as compared with other departments in the same establishment.

The word "pharmacy" should be insisted upon and the word "drug store" not permitted.

NOTE: The use of the designation "pharmacist" or "apothecary" would be recommended as appropriate terms.

When reported facts on the questionnaire seemed to conform to the rigid specifications established, as an evidence of the spirit and ability of the pharmacist responsible for the establishment, an inspection would be arranged and if this is reported as satisfactory, the pharmacy would be registered for a limited period, say two years, subject to reregistration, upon evidence being submitted which indicated the maintenance of the standards.

All established pharmacies in the Country would be invited and urged to "register." Compliance with the minimum standards believed to be necessary for the maintenance of high professional ideals is all that would be required. The financial cost to the pharmacist to equipping for such pharmaceutical service would be relatively small. This has recently been outlined by Mr. Delgado in the JOURNAL OF THE A. PH. A. (July 1933, page 680).

Professional assistance, through the periodic publishing of information on prescription practice, on the latest "Materia Medica," suggestions for professional helps to physicians, etc., would be a feature.

In this way it is believed that a group of our existing professional pharmacists would be encouraged and helped to render better service to the medical profession and the public, also that these pharmacies would be justified in appealing to physicians for support as a group and that physicians could ethically recommend their patients to have their prescriptions filled in these pharmacies, registered by the "National Council."

There is nothing in this plan to prevent any pharmacist participating in this program. It will not require more than every registered pharmacist is now expected to offer. Large organizations of department store type could readily meet all requirements by establishing a properly organized professional department. George B. Evans demonstrated the practicability of this many years ago.

GROUP 2—THE HOSPITAL PHARMACIST.

In the 1933 Hospital Standardization Report of the "American College of Surgeons" will be found the "Manual of Hospital Standardization" which sets forth the standards which must be maintained by a hospital which is to receive recognition by the medical authorities in this Country. These specifications are accepted by the American Medical Association and by the American Hospital Association.

Under "Pharmacy" the following statement is made:

"Many hospitals have a pharmacy with one or more registered pharmacists employed either

part or full time. The managements of several institutions believe their pharmacy afforded a financial saving. To increase the economy relative to expense of medicine, the professional staff was requested in many cases to limit the amount of proprietary medicine prescribed in hospital practice and make use of their personal prescriptions for compounding drugs. The use of a carefully worked out hospital pharmacopœia tends to increase economy and efficiency."

The truth of this statement has been throughly proven and the object of the sub-group, dealing with the pharmacy of the hospital would be to first determine the minimum specifications for a hospital pharmacy covering the personnel, the stocks and their handling, the library and apparatus and other features such as manufacturing and buying.

The ultimate saving to the hospital is another phase of outstanding importance since the adoption of this program must justify itself economically by more than paying a salary sufficient to insure the employment of a well-trained pharmacist who would be a member of the official staff of the hospital.

The pharmacist should have an educational background which will enable him to meet the medical staff with justified confidence, bringing to the group a knowledge of drugs and their action, combinations and dosage forms.

When properly developed the installation of such a properly manned pharmacy should become one of the requirements for the registration of the hospital.

GROUP 3—THE U. S. PUBLIC HEALTH, MILITARY AND NAVAL PHARMACISTS.

This Council would endeavor to work, in coöperation with the Governmental organizations in the development and extension of this phase of pharmaceutical service.

The author said that Pharmacists R. R. Gaw of Pittsburgh, H. A. K. Whitney of Ann Arbor, and Mr. Sechrist of New York, would discuss phases of professional pharmacy.

Mr. Whitney stated that pharmacists need the educational background which fits them to meet the medical staff on an equal footing. He referred to the economy resulting from the employment of a pharmacist by a hospital. He discussed the paper[1] and referred to them in his remarks, which follow, in part.

"The services that are available by pharmacists are mentioned in one of these papers, together with other features of a pharmacist's activities outlined through conference with the medical staff, the economical administration of purchases of medical supplies, and the records and control of narcotics and alcoholics which features a properly trained pharmacist in the smaller hospital might include, is outlined on another page. They are listed as 'Special Services' offered by some professional pharmacists in laboratories for clinical testing, for bacteriological examinations and other public health work, assistance rendered to physicians and dentists in their office practice, and so on.

"These subjects are included in the curricula of recognized colleges of pharmacy and it is a type of service that can be given by a properly trained pharmacist.

"Perhaps a recital of some of the things that have been accomplished in our institution may indicate the growing importance of the pharmacists' services." Mr. Whitney stated that it was not difficult to have the medical staff concur in the purchase of an ointment mill, sterilizing equipment, etc. This resulted in doing more and better work; this had been largely done by nurses heretofore and their work is now directed to that which is properly in their line. The pharmacy at the University Hospital is now as well equipped as a small manufacturing establishment. One service has led to another and there has been little resistance, especially when it could be shown there was a saving in costs.

Prof. Louis Saalbach spoke for Mr. Gaw, of Pittsburgh. He is well acquainted with McKennan Pharmacy and the success it has made in interesting physicians and supplying their special needs and prescription work. He stated that this institution was developed from what was formerly a commercial store. It was taken over by a colleague, Mr. O. F. Wolf, who converted it into a professional store. He was not even a graduate in pharmacy but he had the profession so much at heart that he devoted his entire life to the development of the professional side in that particular store and he has succeeded to such an extent that this store is known from

[1] Copies of these may be obtained from Prof. E. Fullerton Cook, 43rd St. and Kingsessing Ave., Philadelphia, Pa.

one end of the country to the other for the character of its practice and its association with physicians. The speaker continued:

"The Pittsburgh College of Pharmacy has charge of the pharmacy at the Fall Clinic under its direction and supervision. One of his associates has direct charge of the laboratory and dispensing room. He is continuously called in for consultation by the members of the staff of the Fall Clinic for information regarding the manufacturing of the different types of solutions. He has opened their eyes to the things which can be done in a pharmacy and shown them that it is possible to save considerable money in the running of that clinic, which is a charitable institution.

"At this clinic there is the opportunity of coming in contact with the medical student of the University of Pittsburgh, because it is used largely as a teaching institution. The senior class sees the patients and diagnoses the case by the side of the physician who has charge of it. They learn how to prescribe and come into the pharmacy to see what the preparation looks like.

"We feel that we have been doing a wonderful work in a professional line, by definitely educating the younger physicians, and the younger dentists with whom we come in contact. It might be well to bring to your attention the fact of how far this education can interest the dental profession.

"Last week, in Pittsburgh, at a State association meeting we were requested to make some kind of of an exhibit. The exhibit was made under the auspices of the AMERICAN PHARMACEUTICAL ASSOCIATION, arranged by the members of the staff of the School of Pharmacy. At that particular demonstration we interested more than six hundred dentists, and at the same time that we had the demonstration, the manufacturers were endeavoring to acquaint them with some of their preparations.

"The dentists were greatly interested in the display made by us, particularly in tooth powders and other preparations of that kind which the pharmacist can make, even including such substances as temporary fillings, for which the dentists have always supposed that a considerable amount of technique was required. They were given a formula and samples of material, prepared by the School of Pharmacy, and advised that they could take that formula to a pharmacy and have it compounded by the pharmacist in charge.

"The dentists assured us that they would ask us again, at some future time, to make displays of an educational character at their meeting, because they are very much interested in that type of work. I feel that the pharmacists of the country can, in their own communities, come in contact with their medical and dental organizations, and stimulate professional pharmacy along the lines outlined by Professor Cook. In my opinion, the future of pharmacy, and the relations with other professions rests largely in the hands of the younger men who are starting out and who we are trying to put on the right track at the school of pharmacy."

President Swain said the hour was getting late and he asked the speakers to condense their remarks so that all who desired would have an opportunity to speak.

Mr. Sechrist, of New York, felt that every hospital pharmacist can endorse the outline of the report. He was of the opinion that if a provision was made for a contact man from a committee to work with the physicians, that he could do much in promoting the well-being of the hospital-pharmacist. It is difficult, for example, to go into the operating room and advise the surgeon what to use, and how much to use. He said that at the New York Hospital they have a formulary committee. Its inception is due largely to the efforts of Dr. R. A. Hatcher and he has designated various members of the staff to particular positions on that committee who are used as contact men for the surgeon. "It is largely in that way, by making that contact man feel the need for the things that we are trying to impress. Very often it is difficult to contact them, we may try for weeks and miss."

"We have the proprietary situation which is to be found in every hospital. Some preparations are very expensive and the interne prescribes them frequently and in quantity because the detail man has, probably, spent the day before with him; the pharmacist must abide his time."

He was of the opinion that if a certain friendship can be built up among some of the doctors through a committee appointed by the Medical Director, that a great deal can be done to promote rational therapeutics. Economy has been stressed, but after all, especially in research institutions, we owe much to the training of the younger men who are going to write prescriptions; they are the ones that really should be guided in the channels of rational therapeutics.

Dean Edward Spease did not know he would be called upon to speak and would confine himself entirely to principles, and not to details. He said in part:

"In Cleveland, for a period of years, we have been working on this problem. We felt that true pharmacy, if it is to succeed, must come through the door of the hospital, and a student must be trained there just as the medical man, the nurse and the dentist. To that end we have worked with our university hospitals; the pharmacists in the hospitals are on the teaching staff of the School of Pharmacy and they are members of the faculty with university appointment.

"Once each month the Pharmacy Committee in the hospital meets; it is made up of a representative from each service in the hospital—medicine, surgery, obstetrics. We have no member from the pathology division and we haven't asked for one. The pharmacists and the directing pharmacists and those six men consider the medicine that is to be used in the hospitals. We do not tell the doctor what he shall use; it is a very different procedure. We have tried to work out a series of principles, which we know will be an enormous saving to the hospitals; we do not say to our medical men that a proprietary is wrong, because it is a proprietary or a specialty and should not be made by a manufacturing house. It must be demonstrated. We are working out and have already recommended our medical council of our hospital group, and the medical council is made up of all these services, including pathology and the administration. We have recommended to them a policy on medication, and that policy, I am sure, will be adopted. This whole program you will be able to read, as it has been accepted for publication. It will soon be out and you can then get it, with a photograph of what we are doing. I could give you the detail, but I think all you want to-day are the principles. In addition to that we felt we had to do something with the retail pharmacist, something that we could build upon for the future.

"So we have formed an Academy of Pharmacy, made up of those retailers who want to do the work as is outlined. We have had the heartiest coöperation and support from the medical profession of the city; three members of our Academy of Pharmacy and three members of our Academy of Medicine have constituted a joint committee to work it out and it has been passed by the Academy of Medicine.

"We feel that those are the principal things that we have accomplished during the recent months. I have been studying this problem for nearly eighteen years, and have had this relationship with the hospital now for nearly three years, and this Academy of Pharmacy for nearly four years, and they recognize us within the hospital group on a basis of equality with the members of the medical profession. We have a great many plans for the future which it is unnecessary to go into.

"As far as savings go, of course, it can be put upon that basis, because our savings last year for our organization were somewhere in the neighborhood of thirty thousand dollars. That doesn't include entirely the manufacturing of pharmaceutical preparations. In our School of Pharmacy we have a control laboratory. Those that need to go through laboratory procedure are sent from the hospitals and the man in charge of that is a very practical man, a man who has had commercial manufacturing experience.

"We are going into the textiles and perhaps, food, some of that we do now; we look after the milk, creams, etc. We have definitely demonstrated to the organization the worth of pharmacy and we have had it in turn expressed to us not only in rank and recognition, but financially."

George Secord said he was very happy to be here this afternoon, and to listen to this very interesting discourse on professional pharmacy. He knew of the work that Dean Spease has been doing, and that is being done by Mr. Gray, and various other hospital pharmacists in Chicago.

The work he has been doing is strictly professional, but there have been no special features of development in testing, and the preparation of ampuls and similar preparations, which are handled for hospitals and the hospital physicians.

He said that in the business section of a city, there is another factor to be considered. "While we may devote most of our time to the professional pharmacy, still we do not have the time and the conveniences which are available to those in the hospitals. The first element in the city pharmacy, attempting to serve the physician and the patient, is to make the business go. In my store, about twenty-nine feet of laboratory space is devoted to the manufacturing of pharmaceuticals, and the compounding of physicians' prescriptions. About sixty or sixty-five per cent of the receipts in the store are from pharmaceutical services and the sale of drugs, crude drugs and pharmaceutical preparations.

"I highly commend the work which is being done and have hopes some day, after we get out from under this terrific strain of organizing work which has been piling on us for many years, to make certain changes in my own business, which will permit of the doing of work along this line. I had hopes of that serveral years ago, but certain conditions determined otherwise, and I have felt since that we have had a great loss."

William Gray said, "A symposium was given on this subject at the last meeting of the Chicago Branch, A. PH. A., which I hope will be published in the JOURNAL. We gave three different phases. I might say, speaking for the Pharmacy Committee in our hospital, they have about one hundred members on the staff, and they supply anything that the medical man wants no matter whether it is for research or other purpose. We supply him and give service."

Henry Brown, of Scranton, Pa., said that last fall a meeting of doctors, dentists and pharmacists was held in Scranton. There was an attendance of about four hundred. A number of able speakers took up the various angles of pharmacy. He made a display of a number of U. S. P. and N. F. preparations, a number of dental preparations, a number of treatments that were original. Dentists wanted preparations different from the regular standard formulary preparations. "I made one, that was tried out successfully, containing thymol iodine with menthol, and sterilized; excellent reports on that have been received. Various antiseptic solutions were prepared. The reception was very pleasing; that is, the comments of physicians and of dentists; they have appreciated the various formulas, which were printed on the tubes with the approximate price attached. Comparison with the other preparations that they have used was very favorable; they appreciated the display and the returns I checked up on in the county, about two months afterwards, showed that the physicians and the dentists were very much interested in the work that was done, and was displayed on that evening.

"Before the end of the meeting they had us promise that in a short time, or in a few months, about twice a year, we would have another meeting of the same type."

Dean George C. Schicks was called on by President Swain. He had jotted down a few things as Professor Cook was reading the plan, which may, possibly, result in a nucleus for something to be used as a standardization for drug stores throughout the United States. It mentions hospitals, and the possibility of pharmacists' employment in such institutions. He continued:

"I visited at a medical meeting a few weeks ago, where a survey was read, which spoke of the drug department in the hospital, in many hospitals, and the survey made of hospitals in the large city. It brought out the fact that from the sale of drugs, in the hospital department there was made a considerable profit, and that profit was used, which amounted to thousands of dollars in some instances, to help pay the expenses of that hospital. That was something new to me and I listened. It may be that that would be an incentive for some hospitals to employ pharmacists, that do not at the present time, so that they may, perhaps, change their medications to those in the U. S. P. and National Formulary.

"I am well aware of the fact by personal contact with hospital pharmacists, and that this is a splendid opportunity for retail pharmacists to realize the contribution that the hospital pharmacists can make. If we want physicians and dentists to write prescriptions it is very necessary that they be told something about the United States Pharmacopœia and National Formulary prescriptions. It is quite necessary that this be presented to them in a form that they can use.

"In our own State we are having splendid coöperation from the medical and dental professions, and the medical men have asked us to show them prescriptions. They want us to translate prescriptions into a National Formulary product. There is real possibility for contributions that the hospital pharmacist can make to the retail pharmacists, in teaching these hospital internes, the medical men and dental men, the art of writing prescriptions and what to write for.

"In New Jersey, a medical man is putting out a phamplet with three hundred prescriptions in it, which will be adopted, I understand, by the medical department of New Jersey, and supplied to medical men showing them what to write for, for U. S. P. and N. F. products in prescriptions.

"Most of the speakers have said something about dental men, and most of them in a favorable way, showing that there is a real opportunity for prescription writing on their part. I know they will write them if they know how to write them. The pharmacist who can get them to write them is not the pharmacist who ridicules, but the pharmacist who assists and shows them how to write them, in a very constructive manner. If the pharmacist goes about it in this way, I

am sure that the dental men will respond. Since you have many representatives on this program, if it is possible, I would ask that a representative from the American Dental Association be named in the plan."

President Swain felt that this is one of the most important phases of our deliberations. He would like to see the time come when it will be possible to set aside an hour or possibly two hours in each one of these annual conventions of the AMERICAN PHARMACEUTICAL ASSOCIATION for such discussions. That a stated period might be set aside just for a clearing of the ideas which have accumulated during the year and the experiences which the various ones have had. He concluded by saying that these rather impromptu and sketchy discussions illustrate in a very pointed way just what value there is in having these experts and these men of broad experience in these fields give us the benefit of their own knowledge of the subject.

Mr. Whitney said he hoped that this might be brought up. In an article he had presented in another section, as Dr. Schicks has said, dentists are asked or have been asking for assistance. He read a statement by Dr. Charles B. Edmunds, of the University of Michigan, in his chairman's address of the Section of Pharmacology and Therapeutics, at the Detroit meeting of the American Medical Association: "The pharmacologist cannot be held responsible for instruction in the practice of therapeutics. In only rare instances does he have access to the clinic. The internes, whether they will or not, must be given such training. If the practical therapeutic knowledge of recent graduates is limited to proprietary preparations, teachers are responsible. Their methods of practice are reflected in their students."

After concluding hopeful remarks by President Swain, the Second General Session was adjourned.

THIRD AND FINAL GENERAL SESSION.

The Third and Final General Session of the AMERICAN PHARMACEUTICAL ASSOCIATION was convened at 8:30 P.M. by President R. L. Swain. The minutes of the Second General Session were read and approved.

Moving pictures of convention features were shown by Chairman R. W. Rodman of the Press Relations Committee and much enjoyed by those in attendance.

President Swain stated in behalf of Mr. Rodman, through whose courtesy the moving pictures were shown of the dedicatory exercises of the American Institute of Pharmacy, that the film will be edited, proper headings given to it and it will then be exhibited before the various State Pharmaceutical Associations this summer. The film will then be given to the American Institute of Pharmacy for preservation.

The final report of the House of Delegates was read by Secretary Kelly.

Secretary Kelly said it is customary, as a part of this report, to request that the chairman of the Committee on Resolutions summarize these resolutions or call them to the attention of the General Session by title.

Chairman Leonard O'Connell presented the resolutions by title. (See Resolutions in May JOURNAL, pages 474–476.)

The Chairman moved the adoption of the resolutions; seconded by Henry F. Hein. The report was adopted by vote.

Secretary E. F. Kelly said that in accordance with one resolution submitted by the chairman of the Committee, he was requested to submit the following proposed amendment to the By-Laws of the ASSOCIATION to carry out the purpose of that resolution: That Section 1 of Article III of the By-Laws be amended by the insertion of the words, "The Immediate Past-President," the purpose being to make the immediate past-president an *ex-officio* member of the Council in accordance with the recommendation of President Swain. The Secretary stated that under the By-Laws it would be necessary for this proposed amendment to lay over to the next session of the ASSOCIATION and be acted upon at that time. That will serve to put this plan into effect after this year.

President Swain stated that no action is required at this time.

The Chairman of the Scientific Section was presented to report on the Ebert Prize.

Chairman L. W. Rowe reported that no Ebert prize is to be awarded this year.

L. S. Williams requested to speak under unfinished business.

He hoped the members would not consider it presumption on his part to take the time of

the ASSOCIATION, but he had something on his chest. He referred in a happy vein to the fact that he and President Swain were classmates and recounted some of these school events. He was proud of the fact that he and President Swain were classmates and spoke in part as follows:

"Dr. Swain graduated from the College of Pharmacy, twenty-five years ago this month. The class of 1909 watched him when he received honorable mention for merit. He was the first one on that list, and that is authentic, because this is a program of 1909. He also won the Simon Medal for superior work in Analytical Chemistry and from then on he has been going up the line.

"We had a rather small class of twenty-three members. Six of those members died, six of them are not in Baltimore, living in some other state; there are only seven in the City, but we feel very proud of that class. One of our classmates is a teacher in the School of Pharmacy in the University of Maryland, two of them are former presidents of the Maryland Pharmaceutical Association, one of them has just been appointed by Governor Ritchie to the Board of Pharmacy. Our *Honor Man*, Doctor Swain, has attained the high office of President of the AMERICAN PHARMACEUTICAL ASSOCIATION.

"I have been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION for twenty-four years, but have only attended two conventions, the one in Baltimore and the one here. I didn't have a chance to get into any of the meetings in Baltimore because I was trying to help entertain the visitors, but this year I have attended as many sessions as I could.

"Mr. Williamson said yesterday that he had watched the American Institute of Pharmacy from the time the spade had been put into the ground until it was finished. I was unable to get over here when the ground was broken; until Tuesday, a week ago, I hadn't seen the building and when I drove over and went down Constitution Avenue, I sat in the machine and looked with awe at the building.

"I feel that it is my building as it is your building; I feel that I have vital interests in that building because it represents the highest ideals of pharmacy.

"I know of the great amount of work that Dr. Dunning has done. I was sitting rather far back on the steps of the approach listening to the dedicatory exercises, and when I listened to President Swain a lump came up in my throat, and I couldn't help saying to those that were near me, 'That is my classmate up there.'

"I feel very proud of you, Dr. Swain. The class of 1909 is very proud of you, and at this time, the members wish you to accept a little token of its esteem and affection for our classmate, Bob Swain."

In responding, President Swain said he wanted the members to share this honor with him, so he asked Secretary Kelly to open the package.

He referred to Mr. Williams as one of the most unique pharmacists he had ever known.

"In his drug store in Baltimore City, there is to be found probably the World's finest collection of old pharmacy show globes, so much so that his place has become the center of interest on the part of those who have shown a love for those old pharmaceutical symbols.

"Not only has he done that, but he is starting his second collection of old drug store scales. He has some very unique specimens and is fortunate in collecting the history of each and every one of them. In addition to that he has a unique collection of old drug store mortars and pestles. He seems to have an uncanny ability to collect these things. There has not been a drug store closed for years that Lawrence has not made it his business to find out whether there were articles of this kind for his collection. Those of you who were fortunate enough to be at the dedicatory exercises noticed in those rooms at the American Institute of Pharmacy some fine specimens of show globes. Every one of them was donated by Lawrence Williams to the American Institute of Pharmacy and if you were to go into his store, you wouldn't think any of them had been removed."

President Swain said he greatly appreciated this evidence of esteem of the Class of 1909 and the mere fact that that esteem has survived the stress and the toil of twenty-five years makes him appreciate it all the more. He referred feelingly to his associates and the class history; he assured them that this occasion would be celebrated in a fitting manner later on.

President Swain said that the time had come for the most important and impressive portions of the programs—the installation of officers. Before taking up this part of the program, he deemed it fitting to indulge in a two- or three-minute résumé of the year during which he had been permitted to serve this organization in the capacity of its president. He said in part: "I feel, in the

year of all years, I have been honored beyond my merit because it certainly must remain for a good many years to come, one of the most outstanding, if indeed not the outstanding year in the history of this time-honored organization.

"I would like to go back a year or two when the American Institute of Pharmacy had passed from the legendary, visionary days, so frequently referred to and so truthfully referred to by others, until the later days of that project, when the project was beginning to be launched as an actuality.

"I remarked last year at the Madison meeting, just how fortunately my predecessor, Dr. Philip, was in having served as a president of this organization during that year in which stone was piled upon stone in such a superbly beautiful manner, that in due course we were permitted to see in actual marble this classic institution which we dedicated yesterday.

"I have made calls at the American Institute of Pharmacy during the year, and on most every occasion I have gone out to the front of it, and I have looked over that tremendously impressive vista and I have turned my back upon the Lincoln Memorial and gazed in silent admiration at that exquisite piece of architecture which we now call 'Home.'

"At times in spite of the fact that I actually saw it, in spite of the times when I have been face to face with it. I could actually reach up and touch the coldness of its marble, and I have sometimes almost questioned whether or not the thing is actually there. So it is not often given to people to see the realization, the actual consummation of their wishes so devoutly to be desired, but this year, and the year preceding saw slowly but persistently this achievement of this Association.

"It shall ever be my most cherished memory to have presided over this organization during its dedicatory exercices."

President Swain continued: "Some writer has said that the most permanent thing, the only permanent thing in this journey we call life, is change. That is a rather trite statement but if you will for a moment grasp the suggestion, change is pretty nearly the only permanent thing that we have. And so now I come to a changing of the ways, to the crossroads as it were.

"As I stand here on this particular occasion and at this particular moment, I represent the eighty-second person who has relinquished the honor of the presidency to another.

"I don't know just what I should say as to what my emotions are, but I am conscious of a rather commingling of emotions. I can say frankly, when looked at from one point of view, that I rather regret—I might say quite truthfully that as I pass the gavel over to my successor, worthy as he is, I do it just a bit reluctantly, and that reluctance is not because there is any doubt in my mind as to his great ability to carry on the work, certainly as well as I have done and perhaps a little better, but because it will necessarily prevent me from associating as closely and as intimately with a man with whom I have been permitted to associate with rather intimately over the last twenty-five years. And while, as he knows, this will not in any sense mark any break in the friendship between Dr. Kelly and myself, the part that I regret is that I will not be able to see him quite as frequently as I have in the past."

He referred feelingly to the sterling qualities and efficient services of Secretary Kelly, his unusually genial and kindly demeanor and his high place in pharmacy.

President Swain continued: "As I have looked back over the history of this organization, I sometimes have felt that possibly presidents might be more or less of a nuisance. They come for a moment, they bask in the sunlight and then pass on. And yet when I think that they might be considered a nuisance, I am impressed with a tremendously important accumulation of this material which is to be found in the Year Books and the Proceedings of this Association, and then I am conscious of a deep feeling of admiration for the men who have served as the presidents of this organization during the last eighty-two years.

"I wish it were possible for some person with the proper touch, and the proper management and the proper use of words, to go back over that vast accumulation of material and edit it, bring to life, probably in a volume or two, the gems with which this entire list of books is interspersed.

"Now, I am about to pass out of this chair, so far as the presidency is concerned, and I want to give you just very briefly some little definite interpretation, and it will only be very briefly. I said that I would relinquish this gavel with a certain amount of reluctance but looking at it an another way, I am looking at it in that way with a certain amount of pleasure. I find

that and I rather suspect, that every person who has served as the president of this organization has had exactly the same reaction.

"There have been times during the last eight months when I have been tempted on more than one occasion, to give expression to feelings which I knew I could substantiate with facts, give expression to conclusions and impressions which I knew were absolutely the truth, but yet I always felt on my shoulders a restraining hand. I always felt a sense of responsibility, that perhaps through some peculiar interpretation or misinterpretation of what I was going to say might work to the disadvantage, it might work to the detriment of something far larger.

"If there is anything a person learns from going through the office of the president of the AMERICAN PHARMACEUTICAL ASSOCIATION, it is a sense of responsibility, and one of the finest things about it all is that the traditions, the history, the accomplishments, the ideals, seem to stand by you as restraining hands. So, if by any chance I have broken through and done anything at all in an official way that might possibly be considered as not to the interest of the ASSOCIATION, ascribe it if you please to a complete lack of knowledge on my part that it would have that implication or that effect."

"I am going to repeat what I have said about an hour ago to a former president of this ASSOCIATION, and as I said in my presidential address, that to be asked to serve as a president of this organization, even within the brief period, is certainly the greatest distinction within the power of pharmacy to give, and to have been thus honored at your hands for a brief period shall always remain my most cherished memory."

President Swain requested L. L. Walton, a former president, to again serve as Master of Ceremonies. He asked that the elected members of Council be presented for installation: H. A. B. Dunning, S. L. Hilton and W. Bruce Phillip.

The Master of Ceremonies said: "Mr. President, I have the honor to present to you this triumvirate, three gentlemen whose services to this ASSOCIATION have been so highly valuable that I haven't words sufficient to express them. I can assure you that the work of the ASSOCIATION will continue to progress as it has in the past."

They were duly installed.

The first vice-president, George D. Beal, was presented for installation, as the distinguished son of a distinguished pharmacist.

The second vice-president, Oscar Rennebohm, was presented by proxy, A. C. Taylor representing him.

C. W. Holton was declared installed as treasurer.

The Master of Ceremonies presented E. F. Kelly for installation as secretary.

President Swain considered it more than an honor, he considered it a deep personal privilege to install Secretary E. F. Kelly.

President Swain regretted, due to absence, that it was not possible to install the honorary president, J. K. Lilly.

The Master of Ceremonies then presented the president-elect, Robert P. Fischelis; he said: "For a number of years, I have looked forward to the day when we might have as president of this ASSOCIATION, Dr. Robert P. Fischelis. He has rendered many distinguished services for this body and in other respects and notwithstanding the very high standard of your administration which you are now about to complete, I believe in handing the work over to him, that it will be maintained with credit to himself and with honor to pharmacy."

President Swain said it had been his privilege to know Dr. Fischelis for a number of years. As colleagues and in the National Association of the Boards of Pharmacy he had learned to appreciate his ability, his sometimes uncanny understanding of problems, and a seeming ease with which he worked out difficult problems. He stated:

"Just a short while ago, I was working my way through some of the early (about twenty-five or thirty years ago) proceedings of the AMERICAN PHARMACEUTICAL ASSOCIATION, and I was a bit surprised, and equally as much delighted to find out that even in that early day, the papers were finding their way into the JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, and the YEAR BOOK, and the PROCEEDINGS of the AMERICAN PHARMACEUTICAL ASSOCIATION from the pen of our president-elect.

"During that time or since those years, he has held a number of important pharmaceutical positions, any number of which might be considered a sufficient reward for pharmaceutical effort,

and taken altogether, present a very impressive record of accomplishment for a person who has not yet reached middle age.

"And so in passing this emblem of office over to Dr. Fischelis as a president of the AMERICAN PHARMACEUTICAL ASSOCIATION, let me state to him quite frankly and quite proudly that I know that honor is not unknown to him.

"Let me state also quite proudly and quite frankly again, that I entertain not the slightest misgivings, as to the high standard of services he will render to this organization. A careful study of the work the man has done, and a careful study of the principles for which he has consistently stood, and an equally careful study of the courage which he has on several occasions manifested in his activities in the State of New Jersey, where he has established himself as a great leader of pharmaceutical opinion, will show you that underlying it all has been a deep sense of responsibility and an unusually intelligent grasp then of the direction in which he wanted things to move. I consider it not only as a pleasure but a privilege to be able to greet a friend of many years' standing and to place upon the lapel of his coat this insignia of honor."

The presentation was made and the members arose and applauded and then President Fischelis turned the gavel back to President Swain to conclude this meeting.

President Swain said: "A distinguished statesman of the State of New Jersey knowing of this event, has expressed the desire to me to be present, and to participate. Whether he wants to reflect his glory upon Dr. Fischelis or whether he wants to bask in Dr. Fischelis' glory, I do not know, but at any rate I am going to present to you for whatever remarks the gentleman may desire to make, the Honorable Delain Powers, Congressman of the Fourth Congressional District of the State of New Jersey.

Dr. Powers replied that President Swain asked him about a half an hour ago to make a few remarks on this occasion. He said:

"I have the profound honor this evening and the distinctive privilege, Dr. Fischelis, to present you, my friend, my neighbor, my fellow townsman, a life membership in the New Jersey Pharmaceutical Association. This, Doctor Fischelis is given you by the Association, because of the hours, days and the years of toil in their behalf. I know that I am expressing the wish of every member when I say to you, Dr. Fischelis that we are proud of you, New Jersey is proud of you, and we wish you the utmost success in this, your latest honor."

President Fischelis replied: "I greatly appreciate this presentation, and particularly appreciated the fact that this Association has asked you to come here and present it to me."

Secretary Kelly spoke as follows: "I would like to express to the retiring president my sincere appreciation of the kind references he made to me, and to assure him that it has been just as great a pleasure for me to serve during this year with him, and I am sure we shall find it an equal honor to serve under our incoming president."

"This has been a very unique experience for all of us this week, and we have had the pleasure of taking part in exercises that are very uncommon to even an organization of this distinction, and of this age.

" I couldn't help but be impressed the other day during the dedicatory exercises, with the thought that we were not only dedicating a building, but we were continuing the work of a great many distinguished pharmacists both men and women who preceded us. I couldn't help but think of the great satisfaction I know many of them would have had in that great occasion.

"It seems to me that in a certain sense we were copying their careers, and I hope that those who had the privilege of seeing this can realize what a great happiness it was to do that.

"In addition to other unique experiences this week, for me at least, I have been asked to perform a very unusual duty, or to convey a very unusual message. In a peculiar sense, it is a distinction to be requested by your Father, President Fischelis, to present for him to you, a message of congratulations and good wishes.

"I don't know when I have had a greater honor than to represent the father of the new president. I would like to read this telegram.

" 'My dear Robert: Hearty congratulations to you on this occasion and best wishes for a successful term of office. Your happy father.' "

"I take great pleasure in shaking hands with you as the representative of your father."

President Robert P. Fischelis responded:

Dr. Swain, Fellow Members and Friends: No one who has been present at our meetings this

week and at our dedicatory exercises on Wednesday can help being impressed with the responsibilities that will go with the presidency of this ASSOCIATION in the coming year. Of course, I realize in taking over the office that the active routine work of the ASSOCIATION is well taken care of by our good Secretary, our conscientious Editor, and by the members of the Council and others who will function as they have in the past.

Nevertheless, there is a certain responsibility for leadership which naturally comes to the presiding officer. It is my hope that in the coming year I may be able to meet these responsibilities as they come, with some degree of satisfaction to you.

I am happy to-night to see here in this group some of the people who perhaps remember when I first became active in pharmaceutical association work in my native state, Pennsylvania. It was my privilege to work there with some of the leaders who have since passed away, but who were then doing the big things which we are still talking about to-day and which we are pointing to as part of our splendid heritage.

It is particularly gratifying to me to have had Dr. Walton present me to the President for installation. He has been my mentor on many occasions, and I owe much to his encouragement and advice. I see also Louis Emanuel and Samuel C. Henry who were then very active in the Pennsylvania Pharmaceutical Association, and my good friends, Mr. and Mrs. Peacock, who not only at the State conventions but at other times, in the City of Philadelphia, gave me their kind and helpful advice. There are, of course, many others who have helped me in the years gone by and upon whom I expect to call in the coming year in behalf of the ASSOCIATION.

Now, I know you do not expect a speech at this time and I do not intend making a formal or even an informal address. However, I do feel there are thoughts about the future in all of our minds, and perhaps you should know a little bit about the way I am thinking about some of our problems.

The Headquarters Building has been dedicated. It is now occupied by our officers. The glamour of the dedication ceremony and the publicity connected therewith will soon be matters of memory. The building, of course, will stand always as a monument to all that is fine in pharmacy, all that we expect in the way of professional progress. I look upon it, however, from this time on, more as a living pulsating thing; the source of a stream that will energize and accelerate the life blood of the body pharmaceutic.

I visualize it as a coördinating agency, not displacing any worth-while activity that is going on elsewhere, but doing that which we have so long lacked in American Pharmacy, namely, bringing to a focus these various activities so their full force may be felt wherever and whenever it is necessary to impress upon our people the importance of the tasks in which we are engaged.

I was impressed this week with the discussions in the various Sections and in the House of Delegates. I did not take very much part in them because I was listening intently.

I think it is absolutely necessary for us to keep our finger on the pulse of American Pharmacy. We know we are not only in a transition stage in our own profession, but also in the general affairs of life, and I feel that something must be worked out of all of the things that we have planned, which will give encouragement to the men and women who are laboring in the field of pharmacy, far removed from the things which we have seen and done this week but nevertheless affected very much by them.

Something has been said about increasing our membership, and I am of course very anxious to see that the membership is increased. It was of interest to me to note the many suggestions made that membership in the AMERICAN PHARMACEUTICAL ASSOCIATION should mean something more than just belonging to the ASSOCIATION; that it should be more or less of a badge of distinction in American Pharmacy, and for that reason I feel we should give consideration to creating something distinctive about the membership.

It may be worth considering the plans used by the American Association for the Advancement of Science, the American Public Health Association and the American Medical Association, where general membership is open to anyone, but where there is a second or higher classification. Members may qualify as "fellows" and this classification carries with it additional dues and the privilege of holding office and serving on committees. I think that sooner or later we shall have to study very carefully some revision of our membership classification.

We have had an unusual meeting, and the dedicatory exercises, of course, have been the high point. Next year's meeting will naturally be different from this one and we are looking ahead to

Portland, Oregon, as the next stop in the line of stations along the highway this ASSOCIATION is traveling. I am glad we are going into more or less virgin territory for we shall have an opportunity to do some constructive work in bringing to the people on the West Coast the activities of the AMERICAN PHARMACEUTICAL ASSOCIATION. I hope that all of you will coöperate throughout the year and endeavor by your interest and attendance to make the Portland meeting an outstanding one. President Swain and his co-workers have set a very high mark for his successors to shoot at but we are going to do our very best.

It is very pleasing to have as our First Vice-President, Dr. George Beal, whom I count among my friends, and on whom I know I can call when necessary to assist our progress during the year.

I am hopeful that the Council will so arrange its business that sometime during the year, there will be a meeting, at which we can perhaps submit progress reports, and map out certain activities more definitely and obtain consent to carry them out. I am also hopeful that I may be granted a page or two in each issue of the JOURNAL to maintain a monthly contact with the membership.

Dr. Swain, I greatly appreciate your remarks regarding my work, and you need not feel for one minute that you are going to rest easy in the coming year. I intend to avail myself of your advice and counsel and I know that Doctor Kelly already expects that and he is not going to be disappointed.

Announcements were made by the Committee on Entertainments.

There being no further business the Chair declared the Eighty-Second Annual Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION adjourned.

ABSTRACTS OF PAPERS PRESENTED BEFORE SECTION ON EDUCATION AND LEGISLATION, A. PH. A., WASHINGTON MEETING, 1934.

"Research in Pharmaceutical Education," by W. J. Husa.

In pharmaceutical education a great deal of attention has been given to improvements in curricula and teaching methods. There is one phase of pharmaceutical education whose paramount importance must never be lost sight of, *i. e.*, the correctness of the material that is taught. A discussion is given of the factors involved, such as the training of the teacher and the accuracy of available text and reference books. The importance of research carried out for the improvement of teaching is stressed. Examples are given of successful research of this type which has cleared up discrepancies in the textbook and thus has lead to improved teaching.

"Amendments to the Federal Food and Drugs Act Proposed by Doctors Wiley and Kebler Nearly a Generation Ago," by L. F. Kebler.

This paper calls attention to various amendments that were proposed and embodied in Representative Richardson's bills in 1911 and 1912, after President Taft urged amending the Food and Drugs Act to provide for the breach caused by the United States Supreme Court decision. The amendments in brief cover all advertising separate and apart from the package, therapeutic devices, cosmetics, increasing the number of drugs to be declared on the label and a method for controlling irresponsible parties sending medicines direct to the consumer. The hearings held on the bills are briefly reviewed and attention called to the procedure that resulted in amending the law by including the phrase "False and Fraudulent." This phrase is now much discredited, although at the hearing it was considered an all-sufficient cure for the injury caused by the decision. Dr. Wiley and Dr. Kebler did not favor this amendment.

"Demonstrating the Practical Application of Subjects in the Pharmaceutical Curriculum," by V. Lewitus.

The writer indicates how, by means of a simple experiment carried out by pupils in the drug store, as part of the introductory lesson in materia medica, students will convince themselves as to just what proportion of the theoretical training they are about to undertake will actually come into play as a part of their every-day duties in the drug department. The students keep a tally of each sale over a period of one day, and classify these under the headings of Chemistry, Pharmacy and Materia Medica, the latter including toxicology. This inventory furnishes them with evidence which establishes the worthwhileness of the major subjects in the pharmacy curriculum.

HOUSE OF DELEGATES, AMERICAN PHARMACEUTICAL ASSOCIATION

ABSTRACTS OF THE MINUTES OF THE SESSIONS HELD IN THE SHOREHAM HOTEL, WASHINGTON, D. C., MAY 7–12, 1934.

The First Session of the House of Delegates was convened by Chairman P. H. Costello at 1:30 P.M., Tuesday, May 8, 1934; he welcomed the delegates present. The roll call showed that a quorum was present and the House of Delegates was declared organized for business.

The names of delegates and organizations represented follow. The name of the organization or state is in Italics, names of delegates in capitals and small capitals, and the names of voting delegates in bold face.

The minutes of the House of Delegates are printed here, and to avoid duplication in printing will also answer for the reports of the transactions made to the General Sessions—the reports are abstracts of the minutes.

The names of the delegates follow:

A. PH. A. SECTIONS.

Scientific—**W. J. Husa,** Gainesville, Fla.; F. E. Bibbins, Indianapolis, Ind.
Education and Legislation—**W. H. Rivard,** Providence, R. I.; George C. Schicks, Newark, N. J.
Practical Pharmacy and Dispensing—**L. Walt Rising,** Newark, N. J.; H. M. Burlage, Chapel Hill, N. C.; F. S. Bukey, Lincoln, Nebr.; Anton Hogstad, Jr., St. Louis, Mo.
Commercial Interests—**J. A. J. Funk,** Galveston, Ind.; R. W. Rodman, New York City.
Conference of Pharmaceutical Association Secretaries—**William B. Day,** Chicago, Ill.
Conference of Pharmaceutical Law Enforcement Officials—**Frederick C. A. Schaefer,** New York City.
National Conference on Pharmaceutical Research—**George D. Beal,** Pittsburgh, Pa.; Dr. Wm. J. Husa, Gainesville, Fla.; J. C. Krantz, Jr., Baltimore, Md.

A. PH. A. BRANCHES.

Baltimore—**B. Olive Cole,** Jelleff Carr.
Chicago—**R. E. Terry,** Wm. B. Day, Wm. Gray, C. M. Snow, I. A. Becker.
Cincinnati—**Frank H. Freericks,** Bernard Kotte, Charles G. Merrell, T. H. Rider.
New York—**Hugo H. Schaefer,** H. V. Arny, C. P. Wimmer.
Northern New Jersey—**Ernest Little,** George C. Schicks, Adolph F. Marguier, Lloyd K. Riggs, O. P. M. Canis.
Northwestern—**F. J. Wulling.**
Philadelphia—**E. F. Cook,** F. H. Eby.
Pittsburgh—**C. Leonard O'Connell,** J. A. Koch, E. C. Reif.

NATIONAL ASSOCIATIONS.

American Association of Colleges of Pharmacy—**C. M. Snow,** R. T. Lakey.
American Drug Manufacturers—**F. O. Taylor,** F. E. Bibbins.
American Pharmaceutical Manufacturers—**C. E. Vanderkleed.**
Federal Wholesale Druggists Association—**Paul Pearson,** R. E. Lee Williamson.
National Association Boards of Pharmacy—**C. F. Allan,** George W. Mather, H. W. Parker, Leon Marr.
National Association of Retail Druggists—**J. W. Dargavel,** Thomas Smith, J. A. Goode, G. L. Secord.
National Wholesale Druggists' Association—**E. L. Newcomb,** H. D. Faxon.
Proprietary—**E. F. Kemp.**

STATE ASSOCIATIONS.

Alabama—**L. C. Lewis,** W. E. Bingham.
Arkansas—**H. W. Parker.**
Colorado—**C. J. Clayton.**
Connecticut—**E. J. Murphy,** H. P. Beirne.
Delaware—**G. W. Rhodes.**
District of Columbia—**T. A. Moskey,** R. W. Lusby, M. G. Goldstein, W. P. Herbst.
Florida—**W. M. Hankins.**
Georgia—**R. C. Wilson,** C. H. Evans, W. S. Elkin, Jr.
Illinois—**William Gray,** R. E. Terry, C. M. Snow, W. B. Day.
Indiana—**F. V. McCullough,** F. W. Meissner.
Iowa—**Otto A. Bjornstad,** J. W. Slocum.
Kansas—**Roy C. Reese,** Frank A. Milne, Roy M. Riley, W. Mac Childs.
Kentucky—**G. L. Curry,** J. W. Gayle, R. A. Gayle.
Louisiana—**Lawrence Ferring.**
Maine—**B. K. Murdock,** C. S. Pierce, L. H. Marr.
Maryland—**L. V. Johnson,** A. F. Ludwig.
Massachusetts—**Martin E. Adamo,** Wm. H. Glover.
Michigan—**J. J. Burniac.**
Minnesota—**F. J. Wulling,** J. P. Jelinek, W. C. Muesing.
Montana—**Leon Richards.**
Nebraska—**R. A. Lyman.**
New Hampshire—**T. J. Bradley.**
New Jersey—**R. P. Fischelis,** C. W. Holton, P. R. Loveland.
New York—**C. P. Wimmer,** W. C. Anderson.
North Carolina—**I. W. Rose,** E. V. Zoeller.
North Dakota—**Mattys Jongeward,** Nels N. Brakke, P. H. Costello.
Ohio—**F. H. Freericks,** M. N. Ford, F. H. King.
Oregon—**A. O. Mickelsen.**
Pennsylvania—**R. R. Gaw,** H. V. DeHaven, G. F. Schacterle.
Puerto Rico—**R. L. Irizarry.**
Rhode Island—**G. A. Vars,** J. J. Gill.
South Carolina—**J. M. Plaxco.**
South Dakota—**F. L. Vilas,** Rowland Jones.
Texas—**W. D. Adams,** W. H. Cousins, H. F. Hein.
Vermont—**W. B. Shangraw.**
Virginia—**W. G. Crockett,** G. L. Miller, Roy Crouch, H. S. Falconer, R. G. Barr.
West Virginia—**J. L. Hayman,** R. B. Cook, E. K. Hoge, G. O. Young.
Wisconsin—**E. J. Ireland,** R. W. Clark.
Wyoming—**R. C. Schultz.**

THE COUNCIL.

S. L. Hilton, J. H. Beal, C. E. Caspari, C. H. LaWall, H. A. B. Dunning, H. C. Christensen, Ambrose Hunsberger, Walter D. Adams, H. V. Arny, R. L. Swain, R. P. Fischelis, J. C. Krantz, Jr., E. F. Kelly, C. W. Holton, E. G. Eberle, A. G. DuMez, P. H. Costello.

FRATERNAL DELEGATES.

Brooklyn College of Pharmacy—**F. C. A. Schaefer,** New York City; W. C. Anderson, Brooklyn.

Secretary Stanbury of the Canadian Pharmaceutical Association was recognized and extended greetings and best wishes from the pharmacists of Canada.

Chairman Costello thanked Secretary Stanbury.

In the absence of Vice-Chairman Williams, former Chairman Slocum was requested to take the chair while Chairman Costello read his address which was under the By-Laws referred to the Committee on Resolutions. See pages 454–456, May JOURNAL, A. PH. A.

Chairman Costello announced the appointment of the following committees:

Committee on Nominations: *Chairman*, W. B. Day, Illinois; Walter D. Adams, Texas; H. H. Schaefer, New York; Wesley McClung Childs, Kansas; A. Ziefle, Oregon; M. N. Ford, Ohio; R. C. Schultz, Wyoming; G. W. Rhodes, Delaware; N. N. Brakke, North Dakota.

Committee on Resolutions: *Chairman*, C. Leonard O'Connell, Pennsylvania; Rowland Jones, South Dakota; John W. Slocum, Iowa; A. O. Mickelsen, Oregon; R. B. Cook, West Virginia; R. C. Wilson, Georgia; W. P. Herbst, District of Columbia; W. N. Hankins, Florida; W. H. Rivard, Rhode Island.

Upon request the reports of the Council and of the Treasurer were deferred until the Second Session. The report of the Secretary was read and accepted for publication.

REPORT OF THE SECRETARY.

June 30, 1933 to April 30, 1934.

This report will cover a short ASSOCIATION year and one of more than usual importance. It will be limited, so far as is possible, to such matters of interest as are not dealt with in the reports of other officers and of the special and standing committees. As the Secretary's office cooperates with the officers and committees of the ASSOCIATION, a good part of his work is reflected in their reports.

From the viewpoint of its general activities, the year closing with this meeting has brought improved conditions for the ASSOCIATION as compared to those of the preceding year and although the conditions are still far from satisfactory, there has been a decided change for the better, with indications that the improvement will be continued. It has been necessary, due to reduced income from membership and other sources, to continue the reductions previously made in the operating budget, and to defer or forego activities which should have been undertaken. As reported last year, it has not been necessary to discontinue or materially reduce any important activity and some new ones were begun.

Considered altogether, the ASSOCIATION has come through the recent trying times very satisfactorily and, again, the credit can be given to those who long ago determined its objects and policy and built up its very sound economic structure, to its interested and loyal members who have supported it so faithfully and to the officers who have administered its affairs so conservatively.

The ASSOCIATION has also undergone during this year, a fundamental change in occupying for the first time in its more than eighty years of existence, its own home. No estimate can be made of what pharmacy and the ASSOCIATION have lost during these years, through the lack of a home of its own where the wealth of historical material that it has possessed at some time could have been preserved, where the various organizations promoting the profession of pharmacy could have been consolidated and provided with the required equipment and personnel, and where other activities so necessary to the advancement of our profession could have been developed.

A splendid foundation has now been laid in the building and grounds which we are dedicating and a good beginning has been made toward utilizing them. The partial occupancy of the building represents a great effort and future progress will be more apparent. With the improved facilities now available, one may expect greater interest and greater results. It is most encouraging to record that the ASSOCIATION during such disturbed times has carried this work to a completion which is beyond our earliest dreams and has been able to meet the increased expenses incidental thereto through its accumulated reserves.

The 1933 Meeting.—Following the usual procedure, the proceedings of the meeting were fully reported in the next three numbers of the JOURNAL, in this case the September, October and November 1933, issues; they were also reported in the pharmaceutical press and to a limited extent in the daily press.

Our custom is to report the addresses of the officers, the proceedings of the Council, and the resolutions in the issues of the JOURNAL following the meeting; the proceedings of the General Sessions of the House of Delegates, the American Association of Colleges of Pharmacy and the

National Association Boards of Pharmacy in the second issue; and the proceedings of the five sections and three conferences in the third issue. A complete report of the meeting thus reaches all the members within three months. The papers presented at the meeting are published, as far as this is possible, throughout the year. The number of papers presented and the interest in the work of the sections and conferences is steadily increasing and, while this result is encouraging, it is becoming embarrassing. These contributions must not be discouraged but it is necessary that the contributors economize in time and words as much as can be done. The ASSOCIATION should, as far as is within its power, provide the place in its program and those of its branches and in the publications for every discussion and proper dealing with pharmacy in order that its records may provide, as heretofore, a complete review of the progress of the professions. Such a comprehensive plan, however, is expensive, and requires careful planning and supervision if the result is to be creditable to the profession.

The ASSOCIATION is deeply indebted to the officers of the state association, to the officers of its affiliated organizations, to the officers of the sections and conferences and to the officers of the branches for the thought and effort which they give to the professional work carried on for pharmacy during the year as well as at the annual meetings of the ASSOCIATION. This work is more extensive and more fundamentally valuable than is generally appreciated by pharmacists, or by the public.

The pharmaceutical press should also be commended for the space and attention they give to professional pharmacy, and for the increased emphasis they place on the necessity for a sound professional policy.

The resolutions adopted at the last meeting were promptly sent to the publications, to the state and national associations, to the boards and schools of pharmacy and to others interested. The accompanying request that those resolutions of concern to each group be supported has been more generally complied with each succeeding year.

Even though our annual meetings are well reported, it is important that each delegate make a carefully prepared report of the meeting to his association and it is respectfully suggested that these reports do not deal with details but that they explain the accomplishments of the ASSOCIATION during the year and its plans for the future. If each organization represented here should receive such a report, the work and influence of the ASSOCIATION would be better understood and more generally supported by individual pharmacists.

The 1934 Meeting.—The District of Columbia Pharmaceutical Association promptly undertook the arrangements for this meeting. There was a serious delay due to the difficulty of deciding on the time for the meeting. Governmental and other unusual activities have crowded the hotel accommodations of Washington beyond expectations. However, the officers of the Committee on Arrangements, the Local Secretary and others interested have worked hard to make their visitors comfortable and happy as they trust will be the case. The contributors and others who have coöperated so well deserve our sincere appreciation.

The only changes in the standard program for this meeting are those made necessary by dedication exercises and the award of the Remington Medal. The time allotted to the three divisions of the ASSOCIATION—the Council, the House of Delegates and the Sections and Conferences—to carry on their work is now so crowded that it was not considered wise to curtail it even for such an important occasion.

It was therefore decided to make such changes as were required, in the program of the General Sessions. The dedication exercises proper will take the place of the first General Session usually held on Wednesday morning.

The General Program.—It is recognized that our program has developed into such a complicated one as to be confusing to those not experienced. To carry it out requires so many concurrent meetings of sections and conferences as to prevent attending all of them even for a short time. It is already necessary for three affiliated organizations to hold their meetings in advance, and if the present growth continues it will soon become necessary to consider either further subdivisions or the extension of the meeting over a longer period than one week.

From my close contact with each subdivision now existing, I do not believe that any one of them could be spared as each is doing a necessary work. Some consolidations might be worked out to good effect. In the meantime, the patience and coöperation of those attending our meetings are requested and will be deeply appreciated.

The Headquarters Building.—This subject will be given major consideration in other addresses and reports to be submitted later in the meeting. The offices of the ASSOCIATION heretofore located at 10 West Chase Street, Baltimore, Md., were removed to the Headquarters Building, 2215 Constitution Avenue, during the first week in January. Although the building was officially accepted from the contractors on September 14, 1933, it was thought advisable not to occupy it until January 1934, in order that any minor defects which appeared might be corrected.

Time and care have been taken in equipping and operating the plant, and in landscaping and planting the grounds. These important phases of the undertaking are only partly completed as will be observed and they should not be completed hurriedly. This is especially true of the library and museum which are comparatively new activities for the ASSOCIATION. Only by experience can we learn how they can be made most serviceable, and how to avoid duplicating facilities already available in this wonderful city.

We have operated the building long enough to learn that the annual cost will be surprisingly small considering the character and size of the building, the extent of the grounds and the superb location. The low cost of operating is due to several causes. First and most important, the ASSOCIATION, as a professional and scientific organization, not operated for profit, is exempted from taxation of any kind. Then the building was constructed of the best materials and under very careful supervision and workmanship. The plans for the grading and planting of the grounds were revised several times, to simplify them and to reduce the initial cost.

In addition, every effort has been expended to eliminate the need for elevator and other special services, and by adopting automatic features wherever feasible. The heating plant, the telephone service and the sprinkler system for the grounds are automatic in whole or part.

The result is that the total cost of operation will not be a burden to the ASSOCIATION especially if the other professional organizations that are expected to later occupy the building bear a reasonable share of the operating cost.

Under the tax exemption it is not permitted to accept rental from the building but affiliated professional organizations may bear their share of the actual operating cost. The operating cost referred to does not include the maintenance of the library or museum or other added activities which must be supported by separate funds.

The architects, both of the building and grounds, the builders, the firms that did the grading and planting and the furnishing have coöperated splendidly and were keenly interested in seeing that the work was in keeping with the character and location of the project.

I should like also to record appreciation of the interest and support of the Commission of Fine Arts, the National Capital Park and Planning Commission, the Commissioners of the District of Columbia, the Congress and the President of the United States. As our purposes and plans were made known, we have had splendid support and encouragement from those connected with the enterprise, and full recognition from the Government.

For several years the completion of the building and grounds has required a great deal of thought and attention. From this time, the splendid facilities provided should facilitate the work of the ASSOCIATION and should enable it to broaden and increase the scope of its activities. This result will require the consolidation, in the institution, of the organizations and personnel now engaged in promoting professional pharmacy, thus developing the closely associated directing group that our profession has so badly needed. This first step of consolidation will add but little to the financial burden as many duplicating expenses can be eliminated.

The power of a well-organized group representing, as rapidly as this can become possible, the various professional organizations now affiliated with the ASSOCIATION is difficult to estimate. This task and that of financing additional activities should have the active interest and support of all who are concerned with the preservation and the future development of pharmacy.

The Progress of Pharmacy.—However contradictory this statement may seem, in view of present conditions, pharmacy as a profession is making steady progress.

The four-year course based on high school training is now in effect with few exceptions. The number of schools and colleges, now 67, is not too high although they could be distributed to better advantage. The total number of students in 1931 was about 9900 and of this number about 2900 were graduated. Probably both numbers are greatly reduced in the present year. Considering the number of registered pharmacists in our country, the number of pharmacists graduated annually will not replace the normal losses, taken as a whole and over a period of time.

Just now the conditions are, of course, abnormal. With prerequisite laws in effect in forty-two states and the District of Columbia and with the return of normal conditions, the excess of registered pharmacists should soon be corrected. As it is, the unemployment and distress as reported to the ASSOCIATION is not so acute as in other professions. The reasonable control of entrants into our profession should have careful investigation and study.

There is evidently a growing interest in professional pharmacy among dispensing pharmacists, both in private practice and in institutions. The demand for information on professional phases is increasing and guidance in this connection is a splendid opportunity for the ASSOCIATION.

The laws now in effect in the states for the regulation of the private practice of pharmacy are reasonably adequate but enforcement of them is a subject of major importance. Pharmacy should be represented on each board of health and on every agency regulating the profession. Arrangements have been made for the compilation of a case book concerning court decisions affecting pharmacy and such a work should be of great value in this connection.

The regulation of the practice of pharmacy in hospitals and institutions has not been so satisfactory. Many of these institutions have not observed the state laws regulating the handling of drugs and medicines. After a careful study, the ASSOCIATION decided that the best way to correct the situation was to request that a requirement covering pharmacy should be included among the requirements or essentials governing the admission to the list of registered hospitals of the American Medical Association.

Our request has just been granted and in the recently published list of Essentials is one entitled "Pharmacy" and requiring that "The handling of drugs shall be adequately supervised and shall comply with state laws," which means that the practice of pharmacy in hospitals will in time conform to the same requirements as in drug stores. This step represents splendid coöperation between the two professions and means much toward the protection of the public. When the practice of pharmacy in the Army and Navy is placed on a satisfactory basis, the entire field of practice will be on about the same status for the first time.

Pharmacy and the Government.—The relations of the ASSOCIATION with various divisions of the National Government will become even closer with the location of its offices in Washington.

As previously reported, those who enter the Government service on a Civil Service status are now on a professional basis. This applies to the Veterans' Administration, the Food & Drug Administration and to the various bureaus and divisions in which pharmacists are employed.

In the three military branches, pharmacists have commissioned status in the Public Health Service, are privates and non-commissioned officers in the Army, and chief pharmacists in the Navy rank with that below ensigns. The status in the Public Health Service is satisfactory although the number of commissioned positions is too small. The situation in the Army is entirely unsatisfactory and that in the Navy, while much better, is not satisfactory.

The ASSOCIATION, with the coöperation of other pharmaceutical organizations will not be content until pharmacy is placed on the proper basis in all three branches of service. It is, of course, equally important to have available pharmacists with such training and experience as will ensure the satisfactory discharge of the duties expected of them. The advancement in its educational standards has done most to change the attitude of the Government toward pharmacy.

The ASSOCIATION has been deeply interested in the various measures proposed to amend or rewrite the Pure Food and Drugs Act. It has coöperated closely with the National Drug Trade Conference in its efforts to promote a reasonable revision of this measure. It will be recalled that this ASSOCIATION proposed and promoted the organization of the National Drug Trade Conference with the view that such an organization representing, as it does, every division of the profession and industry, would be an effective body to deal with matters of mutual interest and which are non-controversial among its members. In line with this policy, this ASSOCIATION has not taken individual action but has supported the Conference. Its officials have also worked in close contact with representatives of the U. S. P. in order to safeguard the interests of the Pharmacopœia and the National Formulary in connection with the proposed legislation. As other officers of the ASSOCIATION will deal with this question in detail, no further reference to it is necessary here. The ASSOCIATION's delegates to the Conference for the present year are James H. Beal, S. L. Hilton and your Secretary.

Other officers will also deal with the very important matter of the so-called Retail Drug Code and the relations of the ASSOCIATION to this movement. As is generally known, the Asso-

CIATION supported the Code presented by the National Association of Retail Druggists. When the amended Code was finally approved, the ASSOCIATION was named as one of the organizations to be represented on the National Retail Drug Code Authority and your Secretary was selected by the Council to act as the temporary representative and was later elected Secretary-Treasurer of the Code Authority.

The work has been interesting, if at times discouraging, and our aim has been to support in every possible way the efforts of all who are interested in improving conditions for the retail druggists and, through them, for the entire profession and industry.

Although the Code is intended primarily to promote trading and industry, it has a very definite influence on the arts, sciences and professions. The provisions with respect to wages and hours, and to collective bargaining, have a very important bearing on professional pharmacy. In the President's Agreement, pharmacy was definitely recognized as a profession and exempted from the Code. This position has been modified in the Code and the results are not yet fully apparent.

For these reasons, professional organizations must be interested in codes and the NRA. Furthermore, we are affected by the provisions and the operations of other codes and our welfare can be protected only by watchful care. This work has required great attention and much time which have, very naturally, interfered with the routine work of the ASSOCIATION and became necessary just when many other matters of pressing importance required attention. If the delegates should desire additional information with respect to the Code, I shall be pleased to discuss it further at a later session of the House.

As reported previously, the ASSOCIATION coöperated with the Department of Commerce in printing the "Professional Pharmacy" in the July, August, September and October issues of the JOURNAL. Reprints have since been made available and we are encouraged by the sales which have now practically reimbursed the ASSOCIATION for the actual cost of the printing. This is a comprehensive study of the establishment and operation of a professional pharmacy and furnishes detailed and dependable information not heretofore available. It represents a valuable addition to the survey and studies of pharmaceutical practice which to the ASSOCIATION is promoting, and a practical example of the coöperation which can be mutually advantageous to the Government and the ASSOCIATION.

This brief review of our relations with certain branches and operations of the Federal Government, and there are many others, should emphasize the necessity for a more compact and representative professional organization of pharmacists.

The State and National Association.—Due to the unusual demands on their time, the officers of the ASSOCIATION were unable to visit as many meetings of these associations as in preceding years. However, an effort has been made to have the ASSOCIATION represented as far as possible by an officer or some interested member. These contacts are most important and the coöperation of the delegates here is requested in acting for us wherever possible.

Membership.—The membership has been further reduced during the year but there is evidence that the improved general conditions are being reflected in the reduction of losses recently. Since the last meeting, 24 members, including 1 Honorary and 3 Life Members have died, 20 have resigned and 453 have been suspended for nonpayment of dues. In the same period, 253 members have been elected on payment of dues and 4 through subscriptions to the Headquarters Building Fund.

The total membership is approximately 4000 and the suspensions will probably be lower as financial conditions improve. A number have found it difficult to keep up even the nominal dues, and we need coöperation in bringing in new members as rapidly as possible.

Local Branches.—These organizations have kept up their programs very satisfactorily with one or two exceptions, and are to be commended for their fine efforts under present conditions.

The following branches were active during the year: Baltimore, Cincinnati, Chicago, Detroit, New York, Northern Ohio at Cleveland, North Pacific at Portland, Northern New Jersey at Newark, Northwestern at Minneapolis, Philadelphia, Pittsburgh.

Student Branches.—Student Branches at the Pittsburgh College of Pharmacy, State College of Washington and at the Universities of Florida, Wisconsin, California and Western Reserve were active during the year. A Student Branch at the St. John's University, College of Pharmacy was organized recently, and others are being organized.

These student organizations are doing splendid work and they should be established in other schools and colleges.

Representatives of several student branches are in attendance.

Receipts of the Secretary's Office.—Attached are detailed financial statements of the receipts from January 1 to April 30, 1934, from Dues, Bulletins, Proceedings, YEAR BOOKS, Badges and Bars, Buttons and Pins, and Miscellaneous Items. Remittances to the Treasurer and the balance on hand are also set out.

The attached reports also give detailed information in reference to the printing, binding and sale of the National Formulary and the Pharmaceutical Recipe Book.

The Secretary's annual financial report for the calendar year 1933 was submitted with that of the Treasurer, and audited as provided for in the By-Laws.

SUMMARY OF RECEIPTS AND REMITTANCES, SECRETARY'S OFFICE, JANUARY 1 TO APRIL 30, 1934.

Receipts by Secretary.

Balance on deposit January 1, 1934		$2,048.26
Dues:		
Membership only	$ 88.00	
Membership and JOURNAL, 1932	100.00	
Membership and JOURNAL, 1933	332.00	
Membership and JOURNAL, 1934	4494.50	
Membership and JOURNAL, 1935	30.00	
	$5044.50	
JOURNAL	3782.63	
National Formulary	1356.20	
Recipe Book	261.10	
YEAR BOOKS	4.00	
U. S. P.-N. F. Prescription Ingredient Survey	14.00	
Leaflet No. 14	0.25	$10,462.68
Total Receipts		$12,510.94

Remittances to Treasurer.

Jan. 31, 1934, Check No. 150	$2582.35	
Feb. 21, 1934, Check No. 151	1578.83	
March 27, 1934, Check No. 152	3926.25	
April 24, 1934, Check No. 153	2411.15	$10,498.58
Balance on Deposit		$2,012.36

NATIONAL FORMULARY.

RECEIPTS AND DISBURSEMENTS ON ACCOUNT N. F., JANUARY 1 TO DECEMBER 31, 1933.

Receipts.

Sales for quarter ending March 1, 1933, N. F. V	$1159.20	
Sales for quarter ending June 1, 1933, N. F. V	214.20	
Sales for quarter ending September 1, 1933, N. F. V	984.62	
Sales for quarter ending December 1, 1933, N. F. V	1557.84	
Sales for year, N. F. III and N. F. IV	5.00	
Sales for year, Bulletins N. F. VI	36.50	
Total Receipts		$3,957.36

Disbursements.

N. F. V.:		
Henry McKeen & Son, Insurance	$ 11.25	
Mack Printing Co., Printing and Binding	780.68	
Adley B. Nichols, Exhibits at A. M. A. Meeting	160.25	
N. F. VI.:		
E. N. Gathercoal, General and Traveling Expenses	609.70	
Mrs. L. E. Barnett, Clerical Services	220.00	
Miss Marian Dawling, Clerical Services	13.68	
Miss Hattie Dyniewicz, Exhibit at Madison	10.25	
Samuelson Duplicating Co., Bulletins, etc	986.40	
Glenn L. Jenkins, Committee Expense	6.40	
H. A. Langenhan, Committee Expense	18.80	
Adley B. Nichols, Committee Expense	11.12	
S. L. Hilton, Committee Expense	2.71	
Pilcher-Hamilton-Daily Co., Binders, etc	313.45	
J. A. Darjahn, Lettering N. F. Binders	17.50	
Gaw-O'Hara Envelope Co., Envelopes	41.86	
JOURNAL, A. PH. A., Reprints	7.99	
Mack Printing Co	11.77	
Natl. Confer. Pharm. Research, Membership	25.00	
E. P. Douglas, Printing U. S. P.-N. F. Pres. Ingred. Survey	630.90	
Chicago Book Binding Co., Binding U. S. P.-N. F. Pres. Ingred. Survey	157.92	
Lee G. Cordier, Checking Tests for Tablets	108.00	
E. F. Cook, Expenses U. S. P.-N. F. Exhibit at Chicago	85.38	$4,231.01

RECEIPTS AND DISBURSEMENTS ON ACCOUNT N. F., JANUARY 1 TO APRIL 30, 1934.

Receipts.

Sales quarter ending March 1, 1934, N. F. V	$1327.20	
Use of Text	10.00	
Sales to April 30, 1934, N. F. II and III	2.50	
Sales to April 30, 1934, Bulletins N. F. VI	16.50	$1,356.20

Disbursements.

N. F. VI:		
E. N. Gathercoal, General and Traveling Expenses	$359.85	
Samuelson Duplicating Co., Bulletins, etc	422.30	
Pilcher-Hamilton-Daily Co., Binders and Paper	123.75	
Glenn L. Jenkins, Expenses Sub-committee No. 2	210.20	
E. P. Douglas, Lettering on Binders	19.30	
Miss Edith Smith, Clerical Services	81.60	
Mrs. L. E. Barnett, Clerical Services	22.40	
Adley B. Nichols, Postage, etc	20.33	
Humiston Keeling & Co., Supplies	19.57	
JOURNAL A. PH. A., Reprints	2.66	$1,281.96

SUMMARY OF RECEIPTS AND DISBURSEMENTS ON ACCOUNT OF N. F., JANUARY 1, 1926, TO APRIL 30, 1934.

	Receipts.		*Disbursements.*
1926	$45,318.21	1919–1920	$1,038.89
1927	17,460.75	1921	1.169.98

1928	14,565.15	
1929	12,718.40	
1930	9,940.05	
1931	8,271.00	
1932	4,243.27	
1933	3,957.36	
1934 (to April 30)	1,356.20	
Total Receipts		$117,830.39

1922	404.21	
1923	227.72	
1924	95.59	
1925	236.30	
1926	20,857.09	
1927	8,389.38	
1928	3,560.41	
1929	3,556.60	
1930	6,123.32	
1931	3,702.38	
1932	3,957.36	
1933 (to April 30)	1,281.96	$54,601.19

SUMMARY OF SALES OF N. F. V—JANUARY 1 TO DECEMBER 31, 1933.

Quarter Ending.	Binding.	Copies.	Price.	Amount.	Rec'd by Secretary.
Mar. 1, 1933	Buckram	483	$2.40	$1,159.20	
	Leather	0			$1,159.20
June 1, 1933	Buckram	93	2.40	223.20	
	Leather	1	4.80	4.80	
	Less freight and postage			13.80	214.20
Sept. 1, 1933	Buckram	484	2.40	1,161.60	
	Leather	0			
	Less 37 copies Leather returned and postage			176.98	984.62
Dec. 1, 1933	Buckram	652	2.40	1,564.80	
	Leather	1	4.80	4.80	
	Less freight and drayage			11.76	1,557.84
Total Sales for 1933					$3,915.86

SUMMARY OF SALES OF N. F. V—JANUARY 1 TO APRIL 30, 1934.

Quarter Ending.	Binding.	Copies.	Price.	Amount.	Rec'd by Secretary.
Mar. 1, 1934	Buckram	553	$2.40	$1,327.20	
	Leather	0			$1,327.20
Total Sales for 1934 (to April 30)					$1,327.20

SUMMARY OF COPIES OF N. F. V—PRINTED AND BOUND TO APRIL 30, 1934.

Series.	Buckram.	Leather.	Total.
A	19,561	500	20,061
B	10,023	...	10,023
C	5,000	...	5,000
D	5,000	...	5,000
E	5,000	...	5,000
F	4,042	...	4,042
	48,626	500	49,126

SUMMARY OF COPIES OF N. F. V—DISTRIBUTED COMPLIMENTARY, SOLD AND HELD IN STOCK BY J. B. LIPPINCOTT COMPANY, TO APRIL 30, 1934.

	Buckram.	Leather.	Total.
Copies used in copyrighting and for complimentary distribution through the Mack Printing Co.	33	12	45
Copies distributed complimentary through the Chemical Catalog Co.	32	..	32
Copies sold by the Chemical Catalog Co.*	18,021	70	18,091
Copies distributed complimentary through J. B. Lippincott Co.	15	..	15
Copies sold by J. B. Lippincott Co.	30,194	30	30,224
Copies held in stock by J. B. Lippincott Co.	331	388	719
	48,626	500	49,126

PHARMACEUTICAL RECIPE BOOK—SUMMARY OF RECEIPTS AND DISBURSEMENTS, RECIPE BOOK I.

Receipts.			*Disbursements.*		
1929	$5,256.00		1917	$ 10.50	
1930	1,920.98		1918	19.26	
1931	3,641.80		1919	....	
1932	1,356.64		1920	1.40	
1933	894.94		1921	23.98	
1934 (to April 30)	261.10		1922	42.93	
			1923	....	
Total		$13,331.46	1924	470.70	
			1925	572.47	
			1926	336.38	
			1927	95.08	
			1928	766.66	
			1929	9,838.65	
			1930	51.00	
			1931	61.96	
			1932	....	
			1933	130.51	
			1934 (to April 30)	26.80	
			Total		$12,448.28

SUMMARY OF SALES OF PHARMACEUTICAL RECIPE BOOK I—JANUARY 1 TO DECEMBER 31, 1933.

Quarter Ending.	Binding.	Copies.	Price.	Amount.	Rec'd by Secretary.
Mar. 1, 1933	Buckram	61	$2.78	$169.58	$169.58
June 1, 1933	Buckram	39	2.78	108.42	108.42
Sept. 1, 1933	Buckram	125	2.78	347.50	
	Less postage			0.22	347.28
Dec. 1, 1933	Buckram	97	2.78	269.66	269.66
	Total				$894.94

* The Chemical Catalog Co. sold 107 copies Leather of which 37 copies were returned by dealers to J. B. Lippincott Co. during quarter ending June 1, 1933.

SUMMARY OF SALES OF PHARMACEUTICAL RECIPE BOOK I—JANUARY 1 TO APRIL 30, 1934.

Quarter Ending.	Binding.	Copies.	Price.	Amount.	Rec'd by Secretary.
Mar. 1, 1934	Buckram	94	$2.78	$261.32	
	Less postage			0.22	$261.10
	Total				$261.10

SUMMARY OF COPIES OF PHARMACEUTICAL RECIPE BOOK I—PRINTED AND BOUND TO APRIL 30, 1934.

	Buckram.
Series A	5000

SUMMARY OF COPIES OF PHARMACEUTICAL RECIPE BOOK I—DISTRIBUTED COMPLIMENTARY, SOLD AND HELD IN STOCK BY J. B. LIPPINCOTT COMPANY, TO APRIL 30, 1934.

Copies distributed complimentary	94	
Copies sold	4803	
Copies held in stock	103	
Total		5000

ACCOUNT OF YEAR BOOKS, PROCEEDINGS, BULLETINS.

1. Sales:		2. Expenses:	
1933	$1136.75	1933	$3409.08
1934 (to April 30)	4.00	1934 (to April 30)	1102.39
Total	$1140.75		$4511.47

There being no further business the meeting then adjourned.

SECOND SESSION.

The Second Session of the House of Delegates was held in the Wardman Park Hotel, Washington, D. C., following the First General Session of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The minutes of the First Session were read and accepted (see minutes of the First Session of the House of Delegates).

The annual report of the Council to the House of Delegates was read and accepted. It follows:

ANNUAL REPORT OF THE COUNCIL TO THE HOUSE OF DELEGATES.

This report is submitted to summarize the proceedings of the Council which are printed in full in the JOURNAL.

The reorganization meeting of the Council for 1933–1934 was held in Madison, Wisconsin, on Friday, September 1, 1933. S. L. Hilton was elected Chairman, C. H. LaWall, Vice-Chairman and E. F. Kelly, Secretary. E. G. Eberle was elected Editor of the JOURNAL; A. G. DuMez, Editor of the Year Book; C. E. Caspari, member of the Commission on Proprietary Medicines for a term of five years; H. V. Arny and C. H. LaWall, members of the Committee on Research for a term of five years. The Committee on Recipe Book was continued for one year and the Committee on Unofficial Standards was discontinued.

The President was authorized to make such appointments as are unauthorized, to fill vacancies as they may occur and to make additional appointments as may be necessary or desirable.

The Chairman was authorized to appoint an executive committee of the Council should the occasion arise. A meeting of the Council or of an executive committee was not found necessary and the business of the Council has been transacted by mail. Eight Council Letters covering

forty-two pages and submitting fifty-three items and seventeen motions have been sent to the Council members. Among the more important business transacted, the following items are mentioned:

Arrangements were completed for the transfer of property between the U. S. A. and the ASSOCIATION, as provided for in Public Resolution No. 18, in Square 62, N. W., Washington, D. C. The deeds and agreements involved are quoted in full in Council Letter No. 3.

E. F. Kelly was elected as temporary representative on the National Retail Drug Trade Council; later, however, as the National Retail Drug Code Authority.

Certain of the Liberty Bonds, Fourth Issue, held by several permanent and trust funds were called for payment. These were sold and the proceeds reinvested in uncalled bonds of the same issue at approximately the same price. Five thousand dollars of the accumulated interest of the Life Membership Fund was transferred to the Current Fund to balance the budget.

The contract for printing and mailing the JOURNAL for 1934 was awarded to the Mack Printing Co. of Easton, Pa.

A budget totaling $33,680 for the current expenses for 1934, was adopted. The budget for 1933, totaled $39,525.

The accounts of the ASSOCIATION were audited by W. A. Johnson & Co., Baltimore, Md., Certified Public Accountants, and their report, with a summary of the accounts, was published in the JOURNAL for March 1934, pages 264–268.

May 7th to 12th was chosen as the time for the 1934 meeting, Frank A. Delgado as Local Secretary and the Hotel Shoreham as Headquarters.

The officers of the ASSOCIATION were transferred from 10 W. Chase St., Baltimore, Md., to the Headquarters Building, 2215 Constitution Ave., Washington, D. C., during the first week in January 1934.

The application and Constitution and By-Laws for the St. Johns University, College of Pharmacy, Student Branch, New York, N. Y., were approved.

The ASSOCIATION, by invitation of the officers of Section N, American Association for the Advancement of Science, held a joint session with the American College of Dentists, during the annual meeting of the A. A. A. S. in Boston, December 26–29, 1933. Dr. J. C. Krantz, Jr., *Councillor*, arranged for the joint session and presided.

Dr. H. W. Youngken represented the ASSOCIATION at a meeting of the American Joint Committee on Horticultural Nomenclature in New York City, on January 15, 1934.

The second and third meetings of the Council were held in Washington, D. C., on Monday, May 7th, and on Thursday, May 10, 1934.

Annual reports were received from the Committees on Property and Funds, on Finance, on Publications, on Student Branches, on Research, on Standard Program, on Recipe Book and on National Formulary, and from the Editors of the JOURNAL and of the YEAR BOOK. The Commission on Proprietary Medicines reported progress. These reports covering the property, funds and publications of the ASSOCIATION were given careful attention and they show that the affairs of the ASSOCIATION are in a sound condition.

Mr. J. K. Lilly was nominated to the House of Delegates for election as Honorary-President for 1934–1935; E. F. Kelly, as Secretary and C. W. Holton, as Treasurer.

Mr. Charles Moore, *Chairman* of the Commission of Fine Arts, was elected an Honorary Member.

The Research Fund of $1000 was awarded to Dr. W. J. Husa for the continuation of his studies of extraction, and arrangements were made to publish the reports on the work so far done under similar grants.

The proposal to establish a Council on Pharmaceutical Practice was submitted by Prof. E. Fullerton Cook and a committee was appointed to study the plan and report later to the Council.

Permission to partially reproduce the text of the N. F. V was granted to several applicants for which the usual charge was made except in two cases.

Two hundred and sixty applicants were elected to membership during the year.

Respectfully submitted,
S. L. HILTON, *Chairman*.

The report of the Treasurer, deferred from the First Session, was read by Treasurer Holton and accepted.

REPORT OF THE TREASURER OF THE AMERICAN PHARMACEUTICAL ASSOCIATION,

JANUARY 1 TO MARCH 31, 1934.

PROPERTY AND FUNDS OF THE ASSOCIATION.

	June 30, 1933.	March 31, 1934.
Current:		
Savings and Checking Accounts	$ 2,145.63	$ 3,279.10
Secretary's Account, Baltimore National Bank	2,625.10	2,888.90
Total	$ 4,770.73	$ 6,168.00
Permanent:		
Endowment	$ 14,921.12	$ 15,234.40
Centennial	5,648.18	5,778.44
Ebert Legacy	8,117.32	8,329.82
Ebert Prize	1,072.85	1,044.88
Life Membership	42,106.74	36,755.06
Endowed Membership	129.20	132.25
Research	64,319.86	65,038.94
Headquarters Building, Bonds and Cash	74,582.18	2,954.85
Headquarters Building, Property	422,624.19	487,682.94
Total	$633,521.64	$622,951.58
Trust:		
Procter Monument	$ 16,982.82	$ 17,316.52
Remington Honor Medal	1,314.41	1,326.09
Total	$ 18,297.23	$ 18,642.61
Summary:		
Assets	$638,292.37	$629,119.58
Held in Trust	18,297.23	18,642.61
Total	$656,589.60	$647,762.19

SECURITIES, PROPERTY AND CASH HELD FOR THE ASSOCIATION AND FOR THE TRUST FUNDS, MARCH 31, 1934.

Securities:		
Liberty Bonds, 4th issue, 4¼%	$ 39,200.00	
State of Massachusetts Bonds, 3%	14,000.00	
State of Tennessee Bonds, 4½%	3,000.00	
State of Illinois Bonds, 4%	6,000.00	
State of North Carolina Bonds, 4½%	7,000.00	
City of Baltimore, Md., Bonds, 4%	40,000.00	
City of Chattanooga, Tenn., Bonds, 4½%	8,000.00	
City of Dallas, Texas, Bonds, 4½%	11,000.00	
City of Newark, N. J., Bonds, 4%	6,000.00	
City of Paterson, N. J., Bonds, 4¼%	1,000.00	
Chicago, Milwaukee, St. Paul and Pacific R. R. Co., Bonds, 5%	200.00	
Town of Montclair, N. J., Bonds, 4¼%	4,600.00	
City of Detroit, Mich., Bonds, 4%	1,000.00	$140,400.00

Property:		
Lots 3, 4, 5, 7, 12, 13, 14, 15, 16, 17, 801 and 802, Square 62, Washington, D. C.	$523,882.94	
Less Mortgage on Lot No. 7	36,400.00	$487,482.94
Cash:		
Boston Penny Savings Bank, Boston, Mass., Savings Account.	$ 408.08	
Merchants & Newark Trust Co., Newark, N. J., Checking Account	2,883.48	
Baltimore Trust Co., Baltimore, Md., Checking Account	4,678.61	
Baltimore National Bank, Baltimore, Md., Checking Account.	8,954.23	
Maryland Trust Co., Baltimore, Md., Savings Account	2,954.85	$ 19,879.25
Total		$647,762.19

Of the securities owned by the ASSOCIATION only one $1000 bond of the City of Detroit (in the Life Membership Fund) has failed to pay interest to the amount of forty dollars.

The property entry represents the actual payments on the site in Washington, D. C., for the Headquarters Building including recording, insurance of title and other incidental charges and advance payments on architects' and engineers' fees, etc. The entry does not include the cost of furniture, equipment, approach, grading or planting. Record should be made of the fact that the original deposit on the site, amounting to $5000 was paid by Dr. H. A. B. Dunning personally and credited to his subscription, and therefore this amount does not appear in the bank deposits of the Headquarters Building Fund although it is included in the total of collections for the fund.

The net total of subscriptions to the Headquarters Building Fund on March 31, 1934, was approximately the same as on June 30, 1933, $817,156.43, and the total of collections, including the $5000 deposit toward the purchase of the site made by Dr. H. A. B. Dunning which was credited to his subscription, was $506,024.30. The Chairman of the Campaign Committee will give further details in his annual report.

The campaign has cost in total $63,087.76 of which amount $13,023.94 was spent in 1924, $11,944.05 in 1925, $10,007.06 in 1926, $9297.31 in 1927, $10,627.34 in 1928, $3333.61 in 1929, $1031.25 in 1930, $1495.98 in 1931, $1512.90 in 1932 and $814.32 in 1933. The cost of the campaign has been paid from the interest on the fund and all collections have been used for the purchase of the site, to pay taxes and insurance, architects', engineers' and builders' fees, etc., or are in hand as shown in the yearly reports.

The Secretary's report will show receipts from Dues, the JOURNAL, the National Formulary, Recipe Book, YEAR BOOKS, Proceedings, Bulletins, Badges and Bars, Buttons and Pins, and Miscellaneous Items, which are collected by him and deposited in the Secretary's account in the Baltimore National Bank. These receipts are transferred by check, accompanied by itemized deposit slips, to the ASSOCIATION'S checking account in the Merchants and Newark Trust Company from which all budget expenses are paid by voucher check.

The annual report of the Treasurer for the calendar year 1933 was audited and approved by W. Albert Johnson, the auditor approved by the Council. A summary of this report, together with the report of the auditor appears in the JOURNAL for March 1934, pages 264–268, and both reports will be published in full in the next YEAR BOOK.

CHARLES W. HOLTON, *Treasurer.*

The reports of the Council and of the Committees on Pharmacy Corps in the U. S. Army and on Legislation were, by request, deferred to the Third Session.

E. F. Kelly reported progress for the Committee on the Study of Pharmacy—it was accepted. The Report of Prescription Tolerances was discussed by R. L. Swain and S. L. Hilton, and will be further reported at the next session of the House of Delegates, and as part of the program of the Section on Practical Pharmacy and Dispensing.

A communication from the Council was read nominating to the House Mr. J. K. Lilly of Indianapolis, Ind., as *Honorary President*, E. F. Kelly as *Secretary* and C. W. Holton as *Treasurer*

of the ASSOCIATION for 1934–1935. On motion, President Swain was authorized to cast the unanimous ballot of the House for the election of those nominated which was done and they were declared elected.

Chairman W. B. Day presented the report for the Committee on Nominations.

REPORT OF THE COMMITTEE ON NOMINATIONS.

The Committee on Nominations of the House of Delegates respectfully submits the following nominations:

For Chairman of the House of Delegates: Rowland Jones, South Dakota.

For Vice-Chairman of the House of Delegates: S. A. Williams, Alabama.

For *President of the* AMERICAN PHARMACEUTICAL ASSOCIATION: P. H. Costello, North Dakota; A. Ziefle, Oregon; F. E. Mortensen, California.

For *First Vice-President:* Frank A. Delgado, District of Columbia; C. L. O'Connell, Pennsylvania; Roy M. Riley, Kansas.

For *Second Vice-President:* John P. Jelinek, Minnesota; J. Lester Hayman, West Virginia; Herbert W. Parker, Arkansas.

For *Members of the Council:* James H. Beal, Florida; C. H. LaWall, Pennsylvania; C. E. Caspari, Missouri; R. L. Swain, Maryland; Theodore J. Bradley, Massachusetts; John C. Krantz, Jr., Maryland; J. G. Beard, North Carolina; Frank Milne, Kansas; Walter F. Meads, Iowa.

On motion, Rowland Jones of South Dakota and S. A. Williams of Alabama were elected as *Chairman* and *Vice-Chairman*, respectively, of the House for 1934–1935. The nominees for President, First Vice-President, Second Vice-President and Members of the Council were approved for submission to the members by mail ballot as provided in the By-Laws.

Chairman Bradley submitted reports for the Committee on Transportation and on Place of Meeting.

REPORT OF THE COMMITTEE ON TRANSPORTATION.

The Committee on Transportation submits the following brief report: This committee has considerable work of an executive character to do during the year, and we were pleased to receive all available concessions from the railroads for this meeting, including round trip tickets for one and one-third fares, a wide spread of time for the sale of these tickets, a thirty-day time limit for the return to the starting point and going and returning by different routes if that be desired. The round trip ticket was used before beginning the going journey and only needs to be validated by the stamp of the ticket agent in the Washington or Baltimore station at the time of beginning the return journey. No additional concessions are allowed to anyone, to our knowledge. These arrangements are in effect in all sections of the United States and Canada, except the Southeast, where special limited excursion tickets are on sale at equally low or lower rates.

T. J. BRADLEY, *Chairman.*

REPORT OF COMMITTEE ON PLACE OF MEETING.

Chairman Theodore J. Bradley stated that practically the same committee had served for the past 18 years and is governed by a purpose to serve the ASSOCIATION. Efforts are made to select meeting places so that in turn all sections of the country are visited. He then referred to the rotation of prior meeting places. If it had not been for the World's Fair in Chicago the Northwest would have been presented last year and the Dedication again interfered this year. The pharmacists of Montana, Washington and Oregon are becoming conscious of the AMERICAN PHARMACEUTICAL ASSOCIATION and have worked up an enthusiastic attitude. The members of the committee present in Washington are unanimously agreed that the 1935 meeting of the ASSOCIATION be held in Portland, the time to be determined by the Council and the Local Committee.

A. O. Mickelson, of Portland, spoke of the attractions of this section of the country and the opportunities for creating a greater interest in the AMERICAN PHARMACEUTICAL ASSOCIATION.

Seconding the report of the Committee on Place, S. L. Hilton moved the selection of Portland for the 1935 meeting.

Both reports (Transportation and Place) were adopted; the time of meeting to be named by the Council.

A. O. Mickelsen expressed appreciation because of the selection and assured the efforts of the pharmacists of the Northwest.

The meeting then adjourned.

Third Session.

The Third Session of the House of Delegates was held in the Shoreham Hotel, Friday forenoon, May 11th, Chairman Costello presiding. The minutes of the Second Session were approved as read. (See Second Session of the House of Delegates.)

Chairman James E. Hancock of the Committee on Procter Memorial presented a verbal report explaining the development and present status of the proposal to place a suitable statue of William Procter, Jr., in the Headquarters Building. He also submitted a resolution which was referred to the Committee on Resolutions. The report was received. (See Resolution No. 15, page 476.)

Chairman Hancock spoke in part as follows:

"At the semi-centennial meeting of the Association in Philadelphia, the characters of some of the early masters of Pharmacy were outlined, and it was there developed that William Procter, Jr., more than any other man, had forecast the destiny of this Association. He had practically defined what was to be the set-up of the Association, and its scientific character.

"In the several years that followed, men like Ebert, Remington, my father and others developed and delivered papers on Professor Procter, and in view of the fact that 1917 was the Centennial year of Procter's birth, the idea germanated that he should be given some tribute for his work for this Association and for American Pharmacy.

"A committee was appointed to formulate such plans, and on the committee's report that the proper thing to do was to erect a statue to Procter in the City of Washington, the committee was continued to collect money, to approve a site and to approve a model for such a monument. By 1914 all the money for this monument had been collected. The marble had been selected, and the site had been approved, after consultation with the trustees of the Smithsonian Institution. They, because of Procter's scientific work, were very glad to have a monument on these grounds.

"The World War, in 1914, interfered and when we got into the War, in 1917, it was absolutely impossible to bring Congress to the consideration of a site for the Procter Memorial, because of the confusion at that time. So the Centennial Year passed, although we were ready to erect the monument.

"In 1921 we began to consider the American Institute of Pharmacy, and, in 1923, when it took shape, this committee proposed to the Association that the Procter Monument should be erected in conjunction with the building. That demanded, of course, a recasting of the figure to adapt it to the foyer which had been selected by the Building Committee, instead of having an outside figure. There is on exhibit in the building a figure of Procter that has met the approval of our committee, with but two minor criticisms. One is from Dr. Wellcome who thinks that the head and the face probably could be a little softer, and Dr. A. R. L. Dohme thinks that there should be a stoop in the figure. I have a letter from a sister of William Procter, in which she pridefully speaks of the very erect carriage of her brother.

"We have concluded to report to you the approval of the proposed statue by the committee, subject to the endorsement and the help of the architect of the building.

"I would like to get some information. As I understand it, this committee was appointed with power to act, and I would like to make this résumé. We not only have the money for the monument, but when it is finished, there will be a substantial balance that will be turned into the treasury for other purposes. The model has been approved by the committee and the site has been selected. We had hoped that Mr. Pope, the architect, would be at this meeting, but unfortunately he is in Europe, and the matter of the base of the monument is to be carefully considered.

"We ask the opinion of this body, when those details have been worked out, if it is within our power to proceed with the casting of the monument, and its erection in the place that has been selected for it, so that it can be unveiled at some proper time, at a meeting either of the House of Delegates, of the whole body or at some other time in the City of Washington. I don't

think there is anything else that I can say but I have been desirous to let you know, because of the long continuance of this committee, the conditions that we have been up against."

Charles J. Clayton moved that the report be received, and take the usual course.

The motion was duly seconded and carried.

The reports of the committees on Physiological Testing, on Pharmaceutical Syllabus, on Legislation, on Weights and Measures, on Local Branches were presented and received for publication. (The reports follow in the order of the stenographic transcript.)

The report of the Committee on Physiological Testing will be printed under Committee Reports in a succeeding issue of the JOURNAL.

The report of the Committee on Pharmaceutical Syllabus was read by H. M. Burlage.

REPORT OF THE COMMITTEE ON PHARMACEUTICAL SYLLABUS.

During the nine months that have intervened between the last and the present report of the Chairman very little of interest has developed in regard to the Syllabus.

The volume has been declared official by the AMERICAN PHARMACEUTICAL ASSOCIATION, the American Association of Colleges of Pharmacy, and, with a slight qualification, by the National Association of the Boards of Pharmacy. The last-named organization has perhaps given the new Syllabus more thoughtful and favorable consideration than has either of the other bodies mentioned.

Certain concrete suggestions or criticisms of a constructive nature have been offered to and gladly accepted by the Chairman, but since these can only be employed when the Syllabus is revised, they need not be discussed at this time.

There is, however, one matter that perhaps merits your attention since it may explain why the last or even the next revision will not satisfy every one having occasion to use it as a guide. It must be clear to any student of the subject matter employed in pharmaceutical education that there is doubtless less unanimity of opinion about it than is true of any other type of organized education. There is no real semblance of unity or agreement about nomenclature, content, sequence or distribution of courses shown in our several school catalogs. It is only a slight exaggeration to say that in the fifty-seven member colleges of the national association there are fifty-seven definitely different curricula offered. Can this be said of any other type of professional or even undergraduate instruction?

We have had no standard to guide us save the very elastic and general one required for membership in the A. A. C. P. The present Syllabus represents an effort to supply such a standard, a standard that is specific and not general.

It is easily understood why the nomenclature together with the outlines and lengths of courses laid down have not met with general approval in spite of the fact that fifty representative people were engaged in the task of setting up a sort of compromise syllabus that was designed as nearly as possible to suit the needs of Board and College members. The fact that we attempted a liberal curricular standardization did not mean that we expected our product to be perfect. That it has been criticized, sometimes severely, is not surprising. Each succeeding revision is going to meet opposition just as each new Pharmacopœia fails to satisfy every one. Humorously enough it is often true that the loudest criticism comes from those who were asked to criticize beforehand but who wait until it is too late to be of much value to turn loose the floodgate of their objections. Instead of such an attitude it would be better if every person who will be involved with the next Syllabus were to offer every helpful criticism possible and at the same time be willing to make minor concessions to major policies.

In the Chairman's fiscal report for August of last year a cash balance of $143.18 was indicated. Up to May 1, 1934, the receipts have been $87.25 (representing the sale of 41 copies of the Syllabus) and the disbursements have amounted to $23. This leaves a current balance of $207.43.

J. G. BEARD, *Chairman.*

The report of the Committee on Pharmaceutical Syllabus was accepted with thanks to Chairman Beard.

The report of the Committee on Physiological Testing was read by Chairman James C. Munch and accepted.—To be printed under "Committee Reports," in a succeeding issue of the JOURNAL.

The report of the Committee on Legislation was read by R. L. Swain, who advised that he was not a member of the committee, on behalf of Chairman Burdine; he stated, the Chairman was of the opinion that the Chairman of the Committee should not be from Washington. The report was accepted, it follows:

REPORT OF THE COMMITTEE ON LEGISLATION.

The ten months, since the Madison meeting of this ASSOCIATION, has been fraught with anxiety, indecision, despondency and disgust on the part of the pharmacists, both professional and commercial. They are anxiously concerning what the final set-up of the food and drug laws, will be. They cannot decide as to the method of conducting their businesses due to the multiplicity of proposed federal and state laws. Their despondency is the result of the failure of the NRA to give them the expected and long sought relief from "cut-throat" competition, even though the manufacturers' dozen lot list price was granted as minimum resale price. Finally, they are extremely disgusted with the whole economic set-up which allows certain practices to be legal in one industry and vicious when applied to the drug field.

You are thoroughly acquainted with what has transpired in these ten months. You are and have been suffering with the "Coditis epidemic," and are, therefore, as well or better informed than we of this committee on the legal phases of the happenings of these few months. Our esteemed Secretary, E. F. Kelly and President R. L. Swain, W. Bruce Philip and R. E. Lee Williamson, a member of this committee, have kept close to the courses of these happenings and have done wonderful work in the interests of the pharmacists. Dr. James H. Beal's work on the proposed Pure Food and Drug Legislation was a masterful effort in your behalf and he is the one who can be commended for informing the authorities and keeping the bills in *status quo*. Therefore, we, the Committee, feel that your officers have kept you fully informed concerning the legislative activities and that there is nothing we can add.

But we do wish to cite some conditions that have a trend of vitally (?) concerning every pharmacist and in a way that present conditions will seem minor and unimportant. Let us take your Code difficulties as an illustration. Local code authorities in the drug field are having great difficulty in collecting the assessments as specified by law, because the individual, who had high hopes of benefits and improvements, has not received them and feels that he has been additionally burdened to the point of economic exhaustion. Again, the rank and file are dissatisfied with the codes, because they do not provide the necessary rules that make it possible to take care of wages and hours out of profits instead of capital.

What will be the result of all this dissatisfaction on the part of the pharmacists on the one hand and the NRA on the other? Just this—You will find that you will be, if you are not now, a private in the regiment of business endeavor; that the Government will enforce the military system of rule strictly, officered by those not of your own choosing. You will be forced to comply, in every way, to any and all orders and regulations. Along with this may come, if the difficulties persist, the operation of each and every business, whether big or small, by license, meaning that to be able to continue in business you will be required to secure a license from the Government. That license will not be given until your business has been inspected, your books examined and a figure set on the amount of profits you can make. Should your business, by ability, personality, advertising or other promotion, exceed the set amount allowed, then all profits over this amount will revert to the Government.

If you don't believe so, then we recommend that you study Tugwell's new book, "Our Economic Society" and especially the last few chapters wherein is stated that the policy for the future will be the limiting of profits. Mr. Tugwell contends that business should not be operated for profits but for service only. It is contemplated by the author or the publishers (probably the latter) to have this book used as a textbook in all the high schools of this country, if it is possible to do so.

This seems a dreary prospect and let us hope it never comes true. Sit down around a table with other men and do some thinking and planning ahead. We should spend a good many days and consult a good many people. We should try to forecast the picture of what the situation may be six months, a year or more, hence. Then we should go home and do something about it and do it right away.

You are going to see some unanticipated developments from what has transpired in Washington. Better keep an ear to the ground.

A. V. BURDINE, *Chairman.*

The report of the Committee of the Establishment of a Pharmaceutical Corps in the United States Army was presented by R. L. Swain. He made an explanatory statement preceding the presentation of the report. He said it was understood by Chairman Leigh of the American Association of Colleges of Pharmacy and the Chairman of the Committee of the AMERICAN PHARMACEUTICAL ASSOCIATION (R. L. Swain) that this would be a joint report, although it would be submitted separately to the respective organizations. He explained that the agreement came about after some correspondence between Chairman Leigh and Chairman Swain and other members of the committee. It was arranged that Dr. Leigh should come to Washington, and he and Secretary Kelly and the reporter were in conference with Surgeon General Patterson, discussing the present existing conditions in the United States Army, expressing firmly our objective, and having him state as clearly and as frankly as he could the Government's reaction to the whole matter.

This report contains a verbatim statement of a letter received from Surgeon General Patterson by the committee, in which he reaffirms his brief previous statement that he is in complete accord with the efforts of the ASSOCIATION to improve pharmacy and pharmaceutical service, and that he stands committed to coöperate in the furtherance of that objective just as soon as the economic situation improves to warrant his asking the Secretary of War to approve a general project which he has in mind for the re-organization of the Medical Department of the Army.

He again expressed his disagreement to any effort on our part to establish a separate and distinct pharmaceutical corps, his reason being that it is in conflict with their larger plans for pharmaceutical service in the army, and that there are present enforcement difficulties, administrative difficulties, which make it highly undesirable from the military point of view. He wants it understood, however, that that has not the slightest reference to his desire that the pharmaceutical service meet our requirements, nor is it to be construed, so he says, as indicating any lack of interest in our program.

The reporter thinks it can be said truthfully, and without the slightest effort at exaggeration, that Surgeon General Patterson's views are in keeping with the later views of his predecessor, to the effect that the pharmaceutical service should be improved in the army, and that it should be done just as promptly as conditions warrant.

Chairman Swain then presented three recommendations, concurred in by the joint committee which are embodied in resolution No. 17, page 476. The report follows:

REPORT OF THE COMMITTEE ON THE ESTABLISHMENT OF A PHARMACEUTICAL CORPS IN THE UNITED STATES ARMY.

(Thirty-fifth Annual Meeting of the American Association of the Colleges of Pharmacy.)

At the 1933 meeting of the ASSOCIATION, the Committee on the Establishment of a Pharmaceutical Corps in the United States Army was instructed to continue its effort to secure the proper recognition of pharmacy in the United States Army. The ASSOCIATION, indeed, went on record for the recognition of pharmacy on a parity with the Dental, the Veterinary and the Medical Administrative Corps within the Medical Department of the United States Army.

The Committee has, during the past year, endeavored to carry out the wishes of the ASSOCIATION, both by correspondence and interviews. A number of the leading pharmaceutical organizations including some of the state pharmaceutical associations have continued, or appointed special committees on the establishment of pharmacy properly in the United States Army. Interest and effort have increased since our last report, and while we have not accomplished our objective, we have made some progress.

Your Chairman, upon the approval of the Chairman of the Executive Committee met, by appointment, with the President and the Secretary of the AMERICAN PHARMACEUTICAL ASSOCIATION in the office of the Surgeon General on April 9th, of this year. The Executive Officer, Lieutenant Colonel Robert C. McDonald, Medical Corps, received us courteously and we conferred with him for some time. After the interview which was very satisfactory from an infor-

mational standpoint, we requested him to transmit to us in writing the chief features of the conference as contributed by him, in order that we might convey to the ASSOCIATION a report free from any misinterpretation. He kindly and promptly complied. We now quote at length from his letter:

"The Surgeon General realizes the high standard of training being offered by the colleges of pharmacy of the leading universities of the country, as explained by Dr. Leigh. While the general management of Army pharmacies is and has always been satisfactory because a sufficient number of qualified pharmacists have been secured through the enlistment of qualified men or the training in the service of enlisted men in pharmacy, the Surgeon General will overlook no opportunity to improve the pharmaceutical service in any manner possible. Furthermore, the Surgeon General will take the first favorable opportunity to improve the pharmaceutical service through securing legislation authorizing the commissioning of an adequate number of recent graduates of the best colleges of pharmacy. The Surgeon General does not, however, believe that the present is an opportune time for securing such legislation.

"In 1932 the Surgeon General recommended to the War Department that legislation be secured authorizing certain increases in Medical Department personnel including a reorganization and increase in the Medical Administrative Corps. In the reorganization of the Medical Administrative Corps he proposed that the name be changed to Medical Auxiliary Corps and that approximately one-third of this new corps consist of registered graduate pharmacists. The Surgeon General still believes that a maximum of forty commissioned pharmacists is adequate for the Army Medical Department. The Surgeon General is not in favor of a separate Pharmacy Corps in the Medical Department of the Army. The proposed Medical Auxiliary Corps would not only provide the necessary pharmacists but also a limited number of specialists other than medical needed by the Army Medical Service.

"The Surgeon General does not favor any plan proposing to provide commissioned pharmacists for the Army except in connection with a bill for increasing the personnel of the Medical Department generally, including a reorganization of the Medical Administrative Corps so as to include pharmacists. Piecemeal legislation, in other words, is not desired.

"The Surgeon General hopes that before the termination of his present detail next year that a favorable time will come for him to resubmit to the War Department his plan for reorganizing and increasing the personnel of the Medical Department."

We made it evident to the Executive Officer that we would not be satisfied with any provision tending to restrict the usefulness and rank of the commissioned pharmacist. We were informed that the proposed policy does not place a limitation upon his advancement. This assertion is in accord with the opinion previously expressed by an officer of the Medical Corps.

Some of you will recall the statement of Lieutenant Colonel Arnold D. Tuttle, Medical Corps, United States Army, given before the House of Delegates at the Miami meeting in which he described the scheme for promotion and grade of pharmacists commissioned in the proposed Medical Auxiliary Corps as follows:

"A practical example of how this promotion scheme will work out can be illustrated by taking the case of the young physician and the young pharmacist aspiring to a commission in the Army. The pharmacist enters as a Second Lieutenant at the age of twenty-four, after four years service or at the age of twenty-eight, he is commissioned a First Lieutenant. At this time, at the age of twenty-eight, the young physician is first commissioned and he is given an original appointment in the grade of First Lieutenant in recognition of this age differential. (However, the M. A. C. officer has already been in the Army four years, drawing pay and allowances, while the young physician at his own expense has been in civil life preparing himself for a commission.) These two officers are both appointed First Lieutenants at the age of twenty-eight, after three years more service or a total of seven years, the M. A. C. officer is promoted to the grade of Captain. The First Lieutenant of the Medical Corps is promoted to the grade of Captain after three years' service. Both, therefore, reach their Captaincy at the age of thirty-one. The Captain of the Medical Corps is promoted to Major after twelve years of service and the Captain of the M. A. C. after sixteen years' service, both reaching the grade of Major at the age of forty. The same principle applies on up to promotion to the grade of Colonel. Both officers reach the grade of Colonel together at the average age of fifty-four years.

"Under this scheme of promotion you will observe that the young pharmacist will have

the same opportunity to rise in the service as the young doctor, dentist, veterinarian or other professional man aspiring to an Army career."

This scheme seems just and fair to your Committee, so far as opportunity for the promotion of the commissioned pharmacist is concerned, but it does not contemplate a special pharmaceutical corps.

In the opinion of some of the army officers a plea for a separate pharmaceutical corps would bring about the restriction of the pharmacists' usefulness and rank. In support of this belief they cite Bill, H. R. 5531 introduced in the Sixty-fifth Congress, first session, which provides: "That the Army Pharmaceutical Corps shall consist of one pharmacy director with the rank of Major ——, five deputy pharmacist directors with the rank of Captain and such number of pharmacists, with the rank of Lieutenant, and of pharmacist apprentices as may be needed for the service."

They also refer to H. R. 16278, Seventieth Congress, second session, a bill to amend the National Defense Act by providing for a Pharmacy Corps in the Medical Department, U. S. Army, which provides: "That pharmacists shall have the rank, pay and allowances of first lieutenant, and chief pharmacists shall have the rank, pay and allowances of Captain, except that chief pharmacists who have served for a period of sixteen years as an officer in the Pharmacy Corps of the Regular Army shall have the rank, pay and allowances of Major." This is the highest grade mentioned in the bill.

Your Committee has received serious objections from several prominent pharmacists to the scheme of the Surgeon General, whereby pharmacists would be commissioned in the proposed Medical Auxiliary Corps, because in their opinion pharmacy would always be subordinated where there was any conflict of interest, and that we would never have the authority or the freedom necessary to develop the highest type of pharmaceutical service. They feel, too, that our identity would be lost and medicine would reap the credit that justly belonged to pharmacy.

The report of the Committee on Pharmacy Corps in the U. S. Army was received and the recommendations referred to the Committee on Resolutions.

The report of the Committee on United States Pharmacopœia was received and the recommendations referred to the Committee of Revision of the U. S. P. The report will be printed in a succeeding issue of the JOURNAL.

REPORT OF THE COMMITTEE ON LOCAL BRANCHES.

The Local Branches were characterized by a year of unusual activity as is evidenced by their published proceeding in the JOURNAL. In the main they had in spite of present unfavorable business conditions a highly successful year.

The branches in the larger areas are experiencing considerable difficulty in providing sufficient funds to carry on their work of circularizing their members. Some of them have had a local branch dues of $1 per year and of course are suffering during the present trying times.

An examination of the vigor of Local Branches clearly shows that the influence of the branch is in direct proportion to the success it has had in giving to its area something not provided by any other group. As one of the members of the committee states it, "The Local Branches must have an object other than to be just another organization." Briefly a local branch to be really successful must fill a real need in the community in which it is operating.

The committee desires to record its satisfaction at the activity of and the growth in number of the student branches.

C. LEONARD O'CONNELL; *Chairman*.

Chairman O'Connell was thanked for his efforts and the report accepted.

The report of the Committee on Weights and Measures was presented by Robert P. Fischelis and discussed by Robert L. Swain, S. L. Hilton, E. F. Kelly, L. M. Kantner, Roy C. Reese and the Chairman. (To be published.)

The report of the Committee on Membership was made by Secretary E. F. Kelly and discussed at considerable length by Robert L. Swain, Ralph W. Clark, A. L. I. Winne, W. J. Husa, Frank B. Kirby, and others. (Abstracts will be published in a succeeding issue of the JOURNAL.)

The reports of the Committee on United States Pharmacopœia and on Horticultural

Nomenclature will be printed under Committee Reports in a later issue of the JOURNAL.

The report of the Committee on Press Relations was read; it follows:

REPORT OF THE PRESS RELATIONS COMMITTEE.

The Press Relations Committee was appointed by President R. L. Swain early this year and its work thus far has been largely devoted to studying the task which confronts the ASSOCIATION in seeking good, healthy, constructive publicity for pharmacy.

If one will look back through annual volumes of the ASSOCIATION JOURNAL he will find recorded the reports of many publicity committees and their trials and tribulations. It has been with considerable caution, therefore, that this new committee has approached its task.

When the Drug Trade Bureau of Public Information ceased to function, due to the withdrawal of financial support by the organizations it represented, it was a keen disappointment to this ASSOCIATION. Because our president is a firm believer in the value of publicity to the ASSOCIATION, however, this new committee has come into existence. The duties of the committee fall into two general classes—regular publicity during the year and special convention publicity.

The committee has approached its first duty with extreme caution and thus far its work has largely been in contacting various newspapers, news syndicates and news magazines in an attempt to sound them out and determine just what sort of material would be most likely to find its way into the news columns. We have been tremendously encouraged and stimulated with what we have learned and feel that given the proper tools we may be able to do a constructive job. Only one release has been distributed since the committee was organized—the announcement of the recipient of the Remington Medal.

The committee's second task, that of convention publicity, has been more aggressively tackled. The clippings presented with this report show graphically the results of the committee's work during the past week. Washington at this particular time is perhaps the hardest city in which to get publicity, for between Congress in session and the NRA newspaper space is at a premium. The committee, however, has been encouraged by the reception its releases have had at the same hands of the Capital press.

The work of the committee at this convention has consisted of attending meetings and taking notes on what transpires, preparing news releases, sending the releases to the various newspapers and syndicates and guiding reporters and news photographers that they may meet those of our members whom they wish to interview.

We have distributed approximately twenty news releases—six copies of each. The twenty releases approximately represent sixty typewritten pages. It was necessary for the committee to have a stenographer to take the releases by dictation and make the required number of copies of each release. It was necessary to have each release delivered to the newspaper by Western Union messenger service in order to make headlines.

We use releases for two reasons: *First*, the material is given to the newpaper in comprehensive, convenient form and as a result we get more space than we would if we depended solely upon what a reporter would pick up at our meeting and *second*, by using releases we are able to interpret the convention reports—to select those subjects which are most constructive and worth while for pharmacy rather than the most sensational and we feel that by actually writing the report the committee is able to regulate the impression received by the public when it reads of our work

This has all required considerable money. The publicity in connection with this convention cost approximately fifty dollars to prepare and distribute. This amount I have been willing to contribute, for this year's work was an experiment. It is necessary, however, for the ASSOCIATION to decide whether publicity at future conventions is worth this cost. The committee feels that it is, and recommends that the sum of fifty dollars be appropriated annually for this purpose.

Still more expensive will be the cost of news releases and publicity material during the year. We feel that by starting in a small way and gradually increasing its activities the publicity program can be made one of great value to pharmacy.

With the coöperation of our Scientific Section and individuals engaged in pharmaceutical research we feel that we can give the public a new picture of the pharmacist and what his services mean to them.

The committee recommends that the ASSOCIATION give deliberation to the question of publicity and if it decides to continue such a program we recommend the establishment of a regular budget for general publicity during the year.

The money invested in a publicity program will not pay dividends for some time and the ASSOCIATION must realize that the results of the work may not be recognized for several years.

The committee thanks those who have helped make its task at this year's convention easier and more effective, and takes this opportunity to express its appreciation to President Swain for the opportunity he has given it to serve the ASSOCIATION and pharmacy.

(Signed) JOHN C. KRANTZ, JR., H. C. CHRISTENSEN,
E. F. KELLY, WALTER D. ADAMS,
R. L. SWAIN, C. LEONARD O'CONNELL,
ROBERT W. RODMAN, *Chairman*.

The report was accepted with a vote of thanks and referred to the Council.

The report of the Committee on Resolutions was deferred to the Final Session of the House of Delegates and the Third Session then adjourned.

FINAL SESSION.

The Fourth Session of the House of Delegates was held in Shoreham Hotel, Washington, D. C. at 7:30 P.M., May 11th, Chairman P. H. Costello presiding.

The minutes of the Third Session of the House of Delegates were read and approved (see Third Session of House of Delegates).

The report of the National Pharmacy Week Executive Committee was read by Chairman Anton Hogstad, Jr.; it follows:

REPORT OF THE NATIONAL PHARMACY WEEK EXECUTIVE COMMITTEE.

The tenth annual observance of the National Pharmacy Week movement will be celebrated October 8–13, 1934. Let us all endeavor to make the forthcoming birthday party of this splendid movement one of the best possible.

During the course of the past three years, an attempt has been made better to define the aims and purposes of Pharmacy Week. In this connection the advice and counsel of many leaders in American pharmacy has been sought. All heartily agree that the movement is a splendid one and that it has a function to perform, but on the other hand it is seemingly quite difficult to define properly the issue. It is quite apparent that any effort of a propaganda nature must have a firm foundation upon which to rest.

The advice and counsel of the leaders in American pharmacy have emphasized the point that the work of this committee should be directed toward making the movement one of a constructive force in American pharmacy and not simply mere propaganda.

A review of the situation clearly indicates that the best agency at hand in this connection is that of our colleges of pharmacy. During the past decade or so pharmaceutical education in this country has made great progress, not only in its requirements but likewise in modern and well-equipped institutions of learning. To-day many of our colleges of pharmacy maintain medicinal plant gardens, museums and other features that can be made to serve the Pharmacy Week movement. The National Pharmacy Week Executive Committee feels that the colleges of pharmacy are in a position and should take an active interest in promoting the activities of this splendid movement, for they are well equipped to render helpful service in this connection.

The Committee recommends that in order for the colleges of pharmacy to participate to the fullest possible extent that the date be changed from the month of October to the last week in April or the first week in May for the year 1935. Under the present arrangement, that of celebrating Pharmacy Week during the month of October, the colleges of pharmacy are just getting under way for another scholastic year. By adoption of a change of date there will be ample time for the deans and their associates as well as our splendid organization to enter into the spirit of the occasion in a whole-hearted and practical manner. Further, this change of date would also allow for the featuring of living medicinal plants from the plant gardens, such as is not possible in certain sections of the country when observed during the month of October.

The following suggestions are offered at this time in regard to a fuller participation by our Colleges of Pharmacy:

1. The inauguration of an "Open House Night" at the College to which members of the laity and allied professions would be extended cordial invitations to attend. A number of the colleges of pharmacy have sponsored an Open House Night in the past with gratifying results. On such occasions the students should demonstrate the activities of the various departments. In addition there should be many interesting displays on exhibit to express in a visual manner the professional aspects of pharmacy.

2. That our colleges of pharmacy secure a prominent exhibit space in the heart of the city for the featuring of a comprehensive professional display at which time the various features of same would be explained to those inspecting same.

3. That the deans, their associates and members of the student body appear before as many civic organizations as possible for the presentation of talks dealing with the romance and spirit of achievement of pharmacy. There are many human interest appeal stories to be found in the archives of pharmacy which when presented in the proper manner will do much to build up a professional prestige in the mind of the laity. That the deans, their associates and student body likewise appear before medical and dental organizations including medical and dental schools in order to acquaint members of the allied professions with the manner in which pharmacy can best serve the allied professions.

4. That our colleges render all assistance possible to retail pharmacists in the matter of professional displays as well as supply data for talks before various civic groups.

During the course of the next month a letter will go out to each dean asking that the institution in question coöperate to the fullest possible extent. The Committee believes that this procedure will mark an important step in making the Pharmacy Week Movement one of a constructive force in American pharmacy and it is hoped that every college of pharmacy will assist in every way possible.

ANTON HOGSTAD, JR., *Chairman.*

The question of date was discussed by Messrs. Husa, Schicks, Lyman. (The report was received, but no definite action seems to have been taken.—EDITOR.)

Report of the Scientific Section.—The Scientific Section held three lengthy sessions in addition to the joint evening session with the Section on Practical Pharmacy and Dispensing. The attendance was good and of the 75 titles 55 papers were actually presented and the others read by title.

New officers were elected by the Section for the ensuing year as follows: *Chairman*, E. V. Lynn; *First Vice-Chairman*, H. M. Burlage; *Second Vice-Chairman*, R. E. Schoetzow; *Secretary*, F. E. Bibbins; *Delegate to the House of Delegates*, L. W. Rowe.—L. W. ROWE, *Secretary.*

Report of the Section on Practical Pharmacy and Dispensing.—Interest in the Section on Practical Pharmacy and Dispensing is manifestly on the increase. Its scope of activity is constantly being enlarged and its attendance is growing. This year 39 papers were presented, three of which were read before the joint session with the Scientific Section. A variety of subjects was dealt with. Symposiums were devoted to Hospital Pharmacy, Dental Pharmacy and Professional Pharmacy. Single papers were given on many other subjects such as dispensing, galenical and manufacturing pharmacy and teaching pharmacy.

The Section adopted resolutions continuing the report of the Committee on Prescription Tolerances, and instituting an information collecting service designed to furnish pharmacists with a central source for material having to do with U. S. P. and N. F. propaganda and related subjects.

The officers elected for the ensuing year are: *Chairman*, H. M. Burlage; *First Vice-Chairman*, L. W. Rising; *Second Vice-Chairman*, Frank L. Black; *Secretary*, L. W. Richards; *Delegate to the House of Delegates*, R. W. Clark.—L. W. RISING, *Delegate to the House of Delegates.*

Section on Commercial Interests.—The Section held two regular sessions. Eight papers were read and discussed and the attendance was good. The following officers were elected for the ensuing year: *Chairman*, Henry Brown; *Vice-Chairman*, Robert Rodman; *Secretary*, R. T. Lakey; *Delegate to the House of Delegates*, John A. J. Funk.—JOHN A. J. FUNK, *Chairman.*

Section on Historical Pharmacy.—Two sessions of the Section on Historical Pharmacy were

held; both were well attended and 24 papers were enthusiastically received and discussed. Of special interest were two illustrated papers, one by Dr. J. T. Lloyd on "The History of Cactus in Medicine," the other by Professor and Mrs. Charles H. LaWall on "The Squibb Collection of Pharmaceutical Antiquities."

The following recommendations were unanimously approved:

1. That the Chairman's Address be referred for publication.

2. That the ASSOCIATION recommend that those entrusted with the future plans of the American Institute of Pharmacy shall make arrangements for the development in the latter of a suitable historical division which by its gradual growth may become an outstanding asset to the Institute.

3. That the ASSOCIATION shall again voice a plea, through its official publication for pharmacists to take a greater interest in historical pharmacy and for Schools of Pharmacy to introduce more of the subject matter of Historical Pharmacy into their curriculum.

4. That a cablegram of greetings be sent by the ASSOCIATION to the Internationales Kongres für Geschichte der Pharmazie upon the occasion of its meeting at Basle, Switzerland, on May 20, 1934.

5. That the JOURNAL of this ASSOCIATION direct attention to the members of the A. PH. A. of the History of Science Society with the suggestion that the support of the work of that organization is desirable.

6. That it be the policy of the ASSOCIATION to procure tone pictures on talking records of the leaders in Pharmacy and that arrangements be made through F. H. Freericks and J. T. Lloyd to procure talking records of Dr. John Uri Lloyd and Dr. James H. Beal in Cincinnati next week.

7. That contributors of papers hereafter cite references wherever possible and that when references are given the authors endeavor to follow the method of citation of some standard text or of *Chemical Abstracts*.

The following officers were unanimously elected for the ensuing year: *Chairman*, C. O. Lee; *Secretary*, H. W. Youngken; *Delegate to the House of Delegates*, Louis Gershenfeld; *Historian*, E. G. Eberle.—HEBER W. YOUNGKEN, *Secretary*.

Section on Education and Legislation.—Nine papers were presented before the Section on Education and Legislation on dentistry, medicine, hospital pharmacy, legislation and pharmaceutical research. There were two meetings of the Section and one joint meeting with the Conference of Pharmaceutical Law Enforcement Officials and the Conference of Pharmaceutical Association Secretaries, each very well attended. The interest of the audience was attested by the great amount of constructive discussion of papers.

The following resolutions were presented and adopted:

"To the end that helpful information regarding ways and means of encouraging the prescribing of U. S. P. and N. F. drugs and preparations be disseminated and made available to the pharmacists of this country; and to the end that the good work of one community or state may not be lost to other communities or states, *be it resolved:*

"That a committee be appointed—to be known as the National Committee on Professional Information. Its specific function shall be:

"*First*—To study the methods used by the various local, county and state organizations in their efforts to bring before dental men usable information on U. S. P. and N. F. drugs and preparations.

"*Second*—To present to the pharmacists of the nation at our next annual convention or before, if the committee deems it advisable, a digest of constructive ideas gathered from such a survey.

"*Third*—The committee is to act as a center for receiving and disseminating information which will increase the pharmacist's opportunities for professional scientific service.

"*Fourth*—The chairman of the committee and two other members are to be appointed by the incoming chairman of this Section. Others may be added if the chairman desires, to make the committee workable."

Be it resolved that this Section on Education and Legislation appoint a committee to study the problem of coöperation with hospital pharmacists.

The officers elected for the ensuing year are as follows: *Chairman*, Oscar E. Russell; *Vice-*

Chairman, C. W. Ballard; *Secretary*, L. W. Rising; *Delegate to the House of Delegates*, Geo. C. Schicks.—W. H. RIVARD, *Delegate to the House of Delegates*.

Conference of Law Enforcement Officials.—The conference held several meetings, also a joint meeting with the Conference of Pharmaceutical Association Secretaries and the Section on Education and Legislation.

The following officers were elected for the ensuing year: *Chairman*, Robert L. Swain, Maryland; *Secretary and Treasurer*, M. N. Ford, Ohio; *Delegate to the House of Delegates*, Fred Schaefer, New York.

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The Conference of Pharmaceutical Law Enforcement Officials has mapped out a very ambitious program for the future. We have slowly built up a substantial fund in our treasury which will allow us to do a lot of things that we have hoped to do in the past. Among these will be a campaign for the deletion of the exceptions and exemptions contained in our pharmacy laws which nullify wholly or in part many of the pharmacy laws of the various states.

Another task which we have set for ourselves is a compilation of the decisions in the various states as they affect pharmacy laws and their enforcement. We hope to have this cross-indexed as to states and subject matter.

It was voted by the Conference, in addition to the State boards, to ask the State associations for donations to the work of this Conference.—ROWLAND JONES, *Reporter*.

Conference of Pharmaceutical Association Secretaries.—The Conference of Pharmaceutical Association Secretaries had scheduled two sessions in addition to a joint session with the Section on Education and Legislation and the Conference of Pharmaceutical Law Enforcement Officials. A total of approximately thirty state association secretaries were present at the various sections.

No set papers were read, but a number of topics were outlined for discussion, and among them: "Is it desirable, if so, is it possible to form a National association from the various associations with every member of the State association to become automatically a member of the National association without payment of additional membership dues?"

"Is a State Drug Code desirable in addition to the National Code?"

"Since the State associations have been ignored in the National Drug Code, what should be the attitude of the State associations to code matters?"

Other similar questions were discussed, each subject being introduced by some member of the organization. A resolution was finally adopted, providing for the appointment of a committee to confer with the officers of the AMERICAN PHARMACEUTICAL ASSOCIATION, relative to the formulation of a plan of membership for a greater national organization.

The following officers were elected for the ensuing year: *Chairman*, F. B. McCullough, Indiana; *Vice-Chairman*, John Slocum, Iowa; *Second Vice-Chairman*, Roy C. Reese, Kansas; *Secretary-Treasurer*, Charles G. Harring, Massachusetts; *Delegate to the House of Delegates*, Charles J. Clayton, Colorado.

On motion of R. E. Terry and second by W. J. Husa and a vote, the reports were received.

Secretary Frank B. Kirby reported on the **Pharmacy Exhibit at the Century of Progress;**

"You may recall that in the Madison meeting we came to you with a request, hoping for $15,000 to cover the estimated budget. It is our pleasure to report that we reduced the amount of the budget to $10,000, and closed the year in the red to the amount of $400. As the ASSOCIATION has signed the contract for the Pharmacy Exhibit for 1934, it is very pleasing to tell you that we have nearly collected the estimated budget for this year, so we are not here this year to ask for any money.

"Having the foundation, the equipment and the flooring, we hope to operate this year on a budget of less than $6000. While last year it was a rather burdensome piece of work to send out letters by the thousand, so much so that the Committee said they would not operate unless they had the money in advance and this year the first forty letters sent to contributors of last year brought in close to $5000, and we have no fear but what the balance of the money will come in.

"Without making any actual count of the attendance we assume that we are really within the limit of reason to estimate that the exhibit was seen by four thousand people per day. We

expect an equal number this year, because improvements are under way, a number of changes which we believe will make the exhibit this year equally interesting to those who saw it last year.

"I would like to close with this one request, that so far as possible you notify the chairman of the Committee, if you or any of your faculty members, including the scientific staff of the manufacturing houses represented, may be in Chicago during the period of the Fair, by which you can have the opportunity of addressing the public on subjects of popular science.

"It is arranged with the Century of Progress that we shall have a lecture hall available, and we already have a fair number of volunteers who are willing to fit in with this opportunity. We consider it a real opportunity by which to further impress on the American public the importance of Pharmacy and what it is doing in the nature of first aid, hygiene and all of those things for which pharmacy stands.

"It is unfortunate that Chairman Christensen and Treasurer Riemenschneider have had to leave for home, but it is a pleasure for me to give this report."

Anton Hogstad, Jr., said that in his opinion at least one million people visited the Pharmacy Exhibit at the World Fair during the year. He had done considerable checking of the exhibits and the Pharmacy Exhibit was one of the best attended of all the exhibits in the Hall of Science.

On motion duly seconded the report was accepted.

The report of the Committee on Resolutions was read by Chairman C. Leonard O'Connell and he explained the points of the resolutions. On motion duly seconded and a vote the resolutions were unanimously adopted. (The resolutions are printed on pages 474–476 in the May issue of the JOURNAL.)

Secretary E. F. Kelly stated that 36 states were represented in the House of Delegates.

Chairman Costello announced the installation of officers. Owing to the absence of S. A. Williams, L. C. Lewis, of Alabama, represented him as proxy.

Chairman Costello installed Rowland Jones as Chairman of the House of Delegates and presented the gavel to him. Chairman Jones thanked Mr. Costello for his words of commendation and the members for the honor bestowed and on behalf of the pharmacists of South Dakota.

L. C. Lewis, as proxy of S. A. Williams, thanked the members on behalf of the pharmacists of Alabama and pledged the support of Vice-Chairman Williams.

On motion duly seconded the House of Delegates was adjourned.

STATE PHARMACEUTICAL ASSOCIATION MEETINGS HELD DURING JUNE.

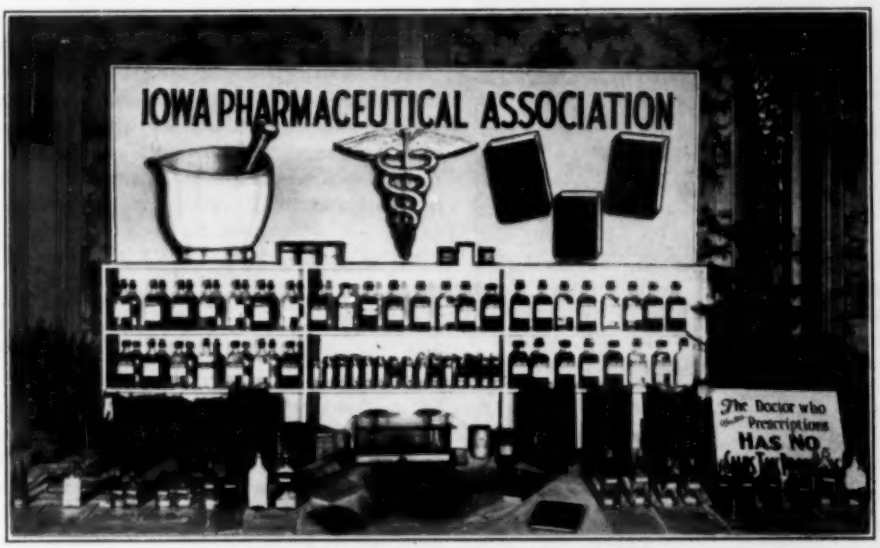
Alabama—19–21, Montgomery.
Arkansas—12–14, Texarkana.
California—3–7, Sacramento.
Colorado—12–14, Colorado Springs.
Connecticut—27–28, New London.
Delaware—27–28, Rehoboth Beach.
Georgia—12–14, Savannah.
Idaho—15–26, Lewiston.
Indiana—19–21, Lake Wawasee.
Kentucky—19–22, Paducah.
Maine—27–29, Belgrade.
Maryland—19–21, Baltimore.
Massachusetts—18–20, Swampscott.
Michigan—26–28, Pontiac.
Mississippi—19–20, Jacksonville.
New Hampshire—24–26, Portsmouth.
New Jersey—13–15, Asbury Park.
New York—18–22, Bolton Landing.
North Carolina—25–27, Durham.
North Dakota—12–14, Dickinson.
Ohio—June 24–July 1, Cleveland.
Oregon—July 9–11, Gearhart.
Pennsylvania—19–21, Wernersville.
Rhode Island—25–26, Watch Hill.
South Carolina—20–21, Charleston.
South Dakota—11–13, Brookings.
Texas—18–21, Mineral Wells.
Vermont—17–19, Fairlee.
Washington—27–29, Olympia.

The AMERICAN PHARMACEUTICAL ASSOCIATION is in receipt of the records requested by the Section on Historical Pharmacy of the voice of Prof. J. U. Lloyd and James H. Beal. The Section on Historical Pharmacy is thankful for the prompt compliance of their request and the records, undoubtedly, will prove of great interest to listeners in years to come.

PHARMACEUTICAL DISPLAY AT IOWA MEDICAL SOCIETY.

The Iowa Pharmaceutical Association held a display of U. S. P. and N. F. preparations at the meeting of the Iowa State Medical Society, in Des Moines, May 9th–11th. This display was sponsored by the Intraprofessional Relationship Committee, composed of Messrs. George Judisch, Ames, *Chairman;* John Waizenegger, Des Moines, and B. P. Bogan, Sioux City, to promote coöperation between physicians and pharmacists.

The display was set up in the Scientific Section of the exhibits, in a space donated by the State Medical Society. Many physicians stopped at the display during the three days of the meeting. A gourd of Aloes, without a label, aroused much curiosity and many physicains enjoyed seeing, for the first time, a drug, in the crude form, which they had often prescribed. This led to various discussions of the other items on display, and gave the members of the committee an opportunity to explain the merits of the U. S. P. and N. F. preparations. In addition to the gourd of Aloes there were several species of *Aloe* plant, and a species of *Artemisia*. The most attractive part of the display was a digitalis plant in bloom.



Pharmaceutical Display at Iowa Medical Society.

One of the most valuable parts of the display was a series of eleven frequently found incompatibilities. These were prepared showing the correct and incorrect method. A sign, placed near the incompatibilities, read: "INCOMPATIBILITY—Why a knowledge of Chemistry and Physics is so essential to the expert pharmacist. The value of a medicine and even the life of the patient may depend on the skill of the pharmacist. See the correct and incorrect method of compounding."

PYORRHŒA AND MOUTH-WASHES.

Dealing with the treatment of pyorrhœa, Pitts (London) refers to the use of mouth-washes and remarks that the most important ingredient in these is the water. Their main purpose is to flush out the mouth and to remove debris. Claims that this or that drug will destroy bacteria found in the mouth may be true of experiments *in vitro*, but it is a fallacy to imagine that any antiseptic can be used in the mouth of such a strength that it will reduce the bacterial flora to any appreciable degree. Experiments show that any reduction is temporary, and quickly made up. When it is remembered that in pyorrhœa there are irregular pockets round the teeth lined with infected tissue, it will be obvious that the antiseptics used in a mouth-wash can only play a minor part in its treatment. But few patients will believe this; so, if only to inspire confidence, a mouth-wash containing some antiseptic is a useful measure. Astringent mouth-washes are recommended. Hydrogen peroxide (five vols.) is useful, as the mechanical flushing action is increased by the effervescence of the nascent oxygen.—*The Prescriber*, June 1934.

EDITORIAL NOTES

Because of association matter in this issue a number of items were omitted from this department.

MEMBERSHIP AWARDS BY SCHOOLS AND COLLEGES OF PHARMACY.

MASSACHUSETTS COLLEGE OF PHARMACY.

Prizes consisting of a nomination to membership and a year's dues in the AMERICAN PHARMACEUTICAL ASSOCIATION are offered by several officers and teachers. These prizes are awarded to members of the graduating class who have made good averages on the senior work in all subjects and exceptional records in separate subjects, as noted.

1. *All subjects*, awarded to John A. MacKenzie. 2. *Pharmacy*, offered by Professor LaPierre, and awarded to Isidor S. Tolpin. 3. *Organic Chemistry*, offered by Treasurer Gammon, and awarded to Phyllis Toon. 4. *Materia Medica*, offered by President Glover, and awarded to Sylvia Rapaport. 5. *Commercial Pharmacy*, offered by Vice-President Ellis, and awarded to Angelo P. Papulis. 6. *Analytical Chemistry*, offered by Dean Bradley, and awarded to Elizabeth H. Wismer.

DUQUESNE UNIVERSITY SCHOOL OF PHARMACY.

Bernard J. Schiller, Duquesne University, School of Pharmacy, Pittsburgh, was awarded membership in the AMERICAN PHARMACEUTICAL ASSOCIATION for excellence in *Pharmacy* by Prof. W. A. Jarrett, of Duquesne University School of Pharmacy. Other memberships were awarded as follows by Duquesne: Benjamin Elkind, by Prof. H. W. Werner for excellence in *Materia Medica;* John J. Ilicisin, by Dean C. Muldoon, for excellence in *Chemistry*. Paul J. Lucas was awarded a membership prize for the best paper presented during the year before Duquesne University Pharmaceutical Association.

PHARMACEUTICAL EXHIBIT AT THE CENTURY OF PROGRESS.

THE AMERICAN PHARMACEUTICAL ASSOCIATION is, as last year, sponsoring the exhibit. A significant indication of the enthusiastic approval given last year's enterprise is the fact that the committee this year received almost 100 per cent favorable responses from participants to the questionnaire sent to the leading contributors to the 1933 exhibit. The pharmaceutical showing of last year proved to be one of the most popular of the exhibits in the medical division.

SCIENTIFIC DISCOVERY.

A correspondent in *Science* questions whether a more fascinating readable and informing essay on the rise and counter influences of scientific discovery by Dr. Welch has ever been written. It must have been a sympathetic labor of love to Doctor Welch merely to compile the data, since medicine as a discipline for the pursuit of science shines out so dazzlingly. For does he not record that, "I have collected, without pretense to exhaustiveness, the names of over a hundred physicians or men trained for the practise of medicine or pharmacy who have made contributions to physics sufficiently notable to secure them a place in the history and records of this science."

POISONING BY METHYL CHLORIDE.

Quite recently Gorham (Bristol), has again called attention to this gas. "Toxic effects," he says, "are produced usually by unnoticed leaks happening in closed or ill-ventilated places. Often the leak may not be noticed, but at higher concentrations toxic symptoms may arise. The gas when inhaled is excreted slowly; small amounts are thus apt to be cumulative and may not cause symptoms until after some days. Some persons appear to be more susceptible than others." Gorham describes four cases illustrating the symptoms of a mild attack—chiefly nausea and vomiting. The collected records show that the effects begin with drowsiness and apathy, leading to stupor, nausea, vomiting and abdominal pain. Muscular tremors may be present, and anuria is usual in severe cases. Treatment consists in first getting the patient into the fresh air, and early administration of oxygen. Alkalis should be given freely. It may be necessary to control convulsions, but on no account should chloral or chloroform be used for this. The anæmia may have to be treated. The gas is oxidized slowly, and the aim of the treatment is to hasten oxidation.—*The Prescriber*, June 1934.

Dr. James Henry Breasted has completed a new screen picture entitled "The Human Adventure." Press reports state that faculty members of the University of Chicago and

newspaper men sat "popeyed" when the picture was presented in the University's Oriental Institute. Before them a panorama of the human race was unrolled on the screen, in a preview of the film showing how the secrets of dead empires are brought to light by archæologists. The film was shown to the public in Chicago on June 6th.

Dr. Breasted is a graduate in pharmacy, although he has not practiced pharmacy for many years.

PERSONAL AND NEWS ITEMS.

Dr. Walter A. Bastedo, president of the U. S. P. Convention, **Dr. Horatio C. Wood, Jr.,** well-known author of medical and pharmaceutical textbooks, **Prof. E. N. Gathercoal,** chairman of the N. F. Revision Committee, and **Dr. Oscar W. Bethea,** of Tulane University, received the honorary degree of "Master of Pharmacy" from Philadelphia College of Pharmacy and Science. The latter delivered the Commencement address.

Among those knighted by King George on his birthday are Dr. F. G. Banting, discoverer of Insulin, and Major R. G. Archibald, director of the Wellcome Tropical Research Laboratories in the Sudan.

Dr. Frank Kirby has announced that beginning on Sunday, June 24th, it is expected to have weekly lectures on scientific subjects in the Hall of Science at the Century of Progress. The first lecture of the series was given by Dr. Arthur Osol, assistant professor of Chemistry and Physics at the Philadelphia College of Pharmacy and Science on the topic, "A B C of Vitamins."

Samuel S. Dworkin has been named *associate editor* of "Drug Store Retailing."

Sir Henry S. Wellcome, a native of Wisconsin, the Remington Medalist for 1934, was awarded the degree of Doctor of Science, *honoris causa,* by Marquette University, on June 13th. The ceremonies took place at the Milwaukee Auditorium.

Miss Edna Gleason, Stockton, Calif., former president of the Southern California Pharmaceutical Association, and also of the Stockton Chamber of Commerce, was one of the speakers at the meeting of Texas Pharmaceutical Association, held in Mineral Wells. Miss Gleason represented the N. A. R. D.

Dr. George F. Zook, U. S. Commissioner of Education, has resigned to accept the directorship of the American Council on Education. His resignation will become effective on July 1st.

Prof. J. A. Haefliger, Basel, Switzerland, was elected vice-president of the Society for the History of Pharmacy. At this meeting an address was delivered by Professor Haefliger and among the number who listened to him were representatives of sixteen states and fifteen university pharmaceutical institutions, and many prominent in pharmacy and as members of organizations. There were present the *Honorary Dean* of the Pharmaceutical Faculty, Paris; Dr. F. Hauser, and Dr. Labhardt.

Dr. A. Richard Bliss, director of the Reelfoot Lake Biological Station, Tennessee, delivered the address at the 84th annual Commencement of Cincinnati College of Pharmacy.

Dr. P. A. Foote, professor of Pharmacy at the University of Florida, is spending the summer visiting points of pharmaceutical interest in Europe. Part of the time is being spent in England; in Brussels he is studying crude drugs; and in other sections of Europe Dr. Foote is finding interest in the museums, libraries and laboratories.

Robert L. Swain, former president of the AMERICAN PHARMACEUTICAL ASSACIATION, delivered the principal address at the Commencement Exercises of the Connecticut College of Pharmacy. He was given the honorary degree of Doctor of Pharmacy, and the same honor was conferred on Robert P. Fischelis, president of the A. PH. A. Dr. Robert L. Swain delivered the address at the commencement exercises of the College of Pharmacy of Columbia University.

Wilhelm Bodemann, veteran of veterans, celebrated his 88th birthday on June 6th. He was the recipient of congratulations from many friends in various sections of the country.

T. L. Swenson, associate bacteriologist, Bureau of Chemistry and Soils, U. S. Department of Agriculture, was recently given a Kappa Psi (pharmacy fraternity) scholarship key. Among those at the presentation were Carson P. Frailey, president, National Drug Trade Conference; Dr. Swenson; Editor E. G. Eberle; W. Bruce Philip, N. A. R. D. counsel; and Secretary E. F. Kelly.

In recognition of his service to the drug industry and the pharmaceutical profession, the Indianapolis College of Pharmacy at its recent commencement exercises conferred the degree of Bachelor of Science in pharmacy on A. Kiefer Mayer, Indianapolis.

Peter A. Brannon, a pharmaceutical chemist in Alabama, and for ten years in the profession, now curator of the Department of Archives and History of the State of Alabama, is a collector of glass bottles. He is particularly interested in early blown bottles, and has some fine specimens of old original containers dating from about 1665 down to 1790. Some of those in his collection are proved of European make. They were, obviously, in the Indian trade and were preserved and buried with the natives.

Mr. Brannon is actively seeking the smaller globular show bottles of drug store days as late makes as 1875, and now finds that though they were quite common and in use as late as 1910, except in the hands of a few collectors and in the museums, they cannot be found.

Samuel C. Davis, Nashville, Tenn., has been appointed by NRA Administrator Hugh S. Johnson to be an administration member of the code authority for the retail drug trade. Mr. Davis, a former member of the State Legislature of Tennessee, has owned and operated a number of drug stores, although at the present time is not in the business.

Dr. Donald D. Van Slyke, of the Rockefeller Institute for Medical Research, New York, delivered the Charles E. Dohme Memorial Lectures for 1934 at Johns Hopkins University School of Medicine, April 26th–28th. The "Physiology of the Amino Acids" and "Factors Controlling Urea Excretion" were the subjects of the addresses.

Z. E. Marvin, owner of a number of Dallas (Texas) pharmacies, is chairman of the local Society for Crippled Children and is working to raise a fund to help the unfortunate children of Dallas. On the committee with him is Mayor Charles E. Turner, a former druggist.

Lieutenant Commander Louis H. Roddis advises that "The Pharmaceutical Recipe Book" has been added to the approved list of professional books carried on the "Standard Book List of the Supply Table of the Medical Department, U. S. Navy." This list is revised annually and will now be readily available to the medical activities of the ships and store stations of the Navy. About 200 copies have already been asked for to meet the demand.

W. Bruce Philip, former president of the AMERICAN PHARMACEUTICAL ASSOCIATION, has received the degree of Master of Law from the National University, Washington. As is generally known Mr. Philip is Counsel for the N. A. R. D.

F. J. Gleason, D.D.S., is now associated with the research work of Merck & Co., in a dental advisory capacity.

William C. Downey, Washington, *honorary president* for 1932–1933 (School of Pharmacy, U. of Md.), was one of the speakers at the Alumni Association Banquet of the University of Maryland. Fred Sultan, of St. Louis, was elected *honorary president* for 1934–1935. Both of these are graduates of the class of 1884.

E. Allen Newcomb, son of Dr. and Mrs. **E. L. Newcomb,** Montclair, N. J., was married June 3rd. His bride was Miss Catherine Purcell, East Milton, Mass. The young couple will reside in Indianapolis after July 1st, where Mr. Newcomb will be associated with Eli Lilly & Co., pharmaceutical manufacturer. Mr. Newcomb was graduated with a Master's degree from the Harvard School of Business this year. He received his B.S. degree from Massachusetts Institute of Technology in 1932.

VETERAN DRUGGISTS' ASSOCIATIONS HONOR SAMUEL L. HILTON.

Members of the Baltimore and Washington Veteran Druggists' associations and their ladies met in joint session at the Olney Inn, for the season's closing session, and honored Samuel L. Hilton. He was rather surprisingly informed that he was observing the fiftieth anniversary in the profession. He has been a member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1890, and has assisted in a number of revisions of the United States Pharmacopœia and the National Formulary. He has held various high positions in organized pharmacy, and was president of the A. PH. A. in 1921–1922.

Among the speakers were Edward A Smyser, president of the Washington association; for the Baltimore association, Charles L. Meyer; Robert L. Swain, former president of the AMERICAN PHARMACEUTICAL ASSOCIATION; R. E. Lee Williamson, of the Federal Wholesale Druggists' Association; Editor E. G. Eberle; W. Bruce Phillip, attorney for the National Association of Retail Druggists at Washington and a former A. PH. A. president. A beautiful scroll, signed by all in attendance was presented to the guest of honor.

Dr. Hilton, recently presented a large assortment of books to the ASSOCIATION and has been instrumental in securing a number of other donations. He has been interested in the building of the American Institute of Pharmacy, since the ground-breaking.

OBITUARY.

W. B. Brazelton, Waco, Texas, president of Behrens Drug Co., died at his home, June 16th, aged 77 years. Mr. Brazelton was not a pharmacist but interested in many commercial activities and civic affairs in Texas.

WILLARD OHLIGER.

Willard Ohliger, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1903, chairman of the Board of Directors and General Manager of Frederick Stearns & Company, died in Detroit, June 8, 1934, at the age of 56. He is survived by his widow.

Willard Ohliger was born in Ohio and received his early education in his home-town of Wooster. Later, he attended the Philadelphia College of Pharmacy from which he was graduated in 1900 with the degree of Doctor of Pharmacy. Not satisfied with this training, he entered the University of Pennsylvania to continue the study of chemistry. After graduation, he came to Detroit and became identified with the House of Stearns, entering as a chemist. Very shortly afterward he was promoted to the position of chief chemist, having charge of the Analytical Department. In 1905 he became general director of all manufacturing, and then, in 1911 superintendent of production. In 1913 he was elected second vice-president, in 1915 general manager and in 1916 first vice-president and general manager. In 1921 Mr. Ohliger was elected president and general manager. At the time of his death, he was chairman of the Board of Directors and general manager.

ROBERT G. ECCLES.

Dr. Robert G. Eccles, member of the AMERICAN PHARMACEUTICAL ASSOCIATION since 1885, and active in the ASSOCIATION for many years, died as a result of injuries sustained by being hit by a street car in Brooklyn, N. Y. Dr. Eccles was formerly a member of the faculty of Brooklyn College of Pharmacy, a chemist for a number of years with the U. S. Department of Indian Affairs, and editor of *Merck's Archives*.

The deceased was born in Scotland and came to this country in his youth, in 1848. Until 1876 he was engaged in educational work in the West. Before returning East he was married and on coming to New York Mrs. Eccles entered the Women's Medical College in Manhattan and Dr. Eccles began his medical studies at Long Island Hospital. Both were graduated and received their degrees in 1882.

DR. I. V. S. STANISLAUS.

Dr. Ignatius Valerius Stanley Stanislaus, associate professor of pharmacy in the Brooklyn College of Pharmacy, Long Island University, since 1923, and prominent in pharmaceutical and chemical circles, died suddenly of a heart attack while dining with friends at a New York restaurant June 1st. He was born at South Bend, Ind., about sixty years ago.

Dr. Stanislaus was a graduate of the School of Pharmacy of the University of Illinois and had taken degrees at Zurich, as well as at Notre Dame, Brooklyn and Providence in this country. He was dean and professor of industrial chemistry in the Department of Pharmacy of the University of Notre Dame in 1896–1901; dean and professor of pharmacy and organic chemistry in the old School of Pharmacy of the Medico-Chirurgical College, Philadelphia in 1906–1912; and was a special lecturer on drug chemistry at Temple University, Philadelphia.

MRS. JOHN F. HANCOCK.

Mrs. John F. Hancock, widow of the late Dr. John F. Hancock, Baltimore, former president of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1873–1874, died June 21st. In former years, she attended many meetings of the ASSOCIATION and remembrances of friends at these occasions entered into her delightful conversations, also the visits of pharmacists, of earlier years, at the home, where are photographs of Procter, Parrish, Maisch, Remington, Shinn and many others, and family paintings of those who contributed to Maryland and American history.

The older members of the A. PH. A. will remember Mrs. Hancock when she was the center of visiting groups. Until the last few days she was interested in passing events and her acquaintance with ASSOCIATION history, Maryland Pharmaceutical Association, and of Baltimore, made visits with her entertaining. In later years her physical infirmities made it difficult for her to move about, but her mind to the last was clear.

For about forty years, the deceased was president of the Women's Auxiliary of the Free Summer Excursions, provided for the children of Baltimore.

Mother Hancock was born January 13, 1841; her living children are James E. Hancock, Miss Fannie Despeaux Hancock, of Baltimore, and Mrs. E. G. Eberle, of Washington, D. C. The many beautiful flowers and messages spoke of the affectionate regard in which she was held.

SOCIETIES AND COLLEGES.

AMERICAN MEDICAL ASSOCIATION.

The president-elect of the American Medical Association, Dr. James Somerville McLester, comes to office with a distinguished career of service to organized medicine. He was born in Tuscaloosa, Ala., January 25, 1877. He received his A.B. degree from the Univerity of Alabama in 1896 and the M.D. degree from the University of Virginia Department of Medicine in 1899. Then followed postgraduate work at Göttingen and Freiburg in 1901 and 1902. He became professor of pathology and later professor of medicine in the Birmingham Medical College, holding this position from 1902 till 1912. This period also included postgraduate study in Berlin and Munich during 1907 and 1908. In the World War he acted as major and chief of medicine in the Base Hospital at Camp Sheridan and was promoted to lieutenant colonel in the American Expeditionary Forces, becoming commanding officer of Evacuation Hospital 20, in 1918. During this time he was a consultant in the medical service. In 1919, following the World War, he became professor of medicine in the University of Alabama School of Medicine.

NATIONAL ASSOCIATION OF BOARDS OF PHARMACY.

Delegates from thirty-four states participated in the deliberations of the National Association of Boards of Pharmacy, including Porto Rico. One hundred per cent attendance was shown by Connecticut, District of Columbia, Kansas, Maine, New Hampshire and North Carolina.

A report of the Executive Committee recommended that the offices of the Association be moved to the American Institute of Pharmacy, Washington, by May 1935, if possible.

Congressman Thomas, of New York, who is a pharmacist, was guest speaker at the banquet.

Provisions were made for a scroll for the officers of the Committee on Pharmacy Exhibit, World's Fair.

Dr. Lopez, delegate from Porto Rico, delivered a message from the Island and gave an interesting account of pharmacy in Porto Rico.

F. W. Hancock, of North Carolina, was elected *Honorary President;* Charles H. Evans, of Georgia, *President;* the *Secretary* and *Treasurer* were reëlected.

AMERICAN PHARMACEUTICAL MANUFACTURERS' ASSOCIATION.

Details of the tentative program for the annual meeting of the American Pharmaceutical Manufacturers' Association to be held June 25th to 28th, inclusive, on Cape Cod, at the Chatham Bars Inn, Chatham, Mass., have been issued and the schedule includes a number of interesting and important subjects including addresses by prominent individuals in the industry.

OFFICERS OF THE PROPRIETARY ASSOCIATION.

The officers elected by the Proprietary Association at its recent annual meeting are as follows: *President,* Frank A. Blair, New York City; *Honorary Vice-President,* Dr. V. Mott Pierce, Buffalo, N. Y.; *First Vice-President,* Henry P. Bristol, New York City; *Second Vice-President,* E. K. Hyde, Buffalo, N. Y.; *Third Vice-President,* James H. Howe, St. Louis, Mo.; *Secretary-Treasurer,* Charles P. Tyrrell, Syracuse, N. Y.; *General Representative,* E. F. Kemp, 425 Star Building, Washington, D. C.; Harry B. Thompson, 422 Star Building, Washington, D. C.; *Executive Committee:* Z. C. Patten, Jr., Chattanooga, Tenn.; J. F. Hindes, Baltimore, Md.; A. H. Beardsley, Elkhart, Ind.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The ninety-fourth meeting of the American Association for the Advancement of Science was held in Berkeley, Calif., from June 18 to 23, 1934. This is the fourth summer meeting of the association on the Pacific Coast, previous meetings having been held at San Francisco in 1915, at Portland, Oregon, in 1925, and at Pasadena in 1931. All these have been joint meetings with the Pacific Division. This year the University of California and the Pacific Division of the association are coöperating as hosts. Sessions were held for the most part in lecture halls of the University of California on the campus at Berkeley. As has been found desirable in summer meetings, symposia and invited programs are emphasized and field trips are numerous.

OFFICERS OF WEST VIRGINIA PHARMACEUTICAL ASSOCIATION.

The following officers were installed for the current year: *President*, Fred C. Allen, Marlinton; *First Vice-President*, Robert R. Pierce, Morgantown; *Second Vice-President*, Herman Wild, Huntington; *Third Vice-President*, H. J. Matthews, Mannington; *Secretary-Treasurer*, J. Lester Hayman, Morgantown; *Council Member*, W. R. Crane, Fairmont.

The following were nominated, election to be made by mail ballot, for the Association officers to be installed at the next annual meeting: *President*, Robert R. Pierce, Morgantown, G. S. Flesher, Cairo; *First Vice-President*, John A. Greear, Huntington, E. B. Moore, Elkins; *Second Vice-President*, James A. Patterson, Martinsburg, J. R. Hertzog, Worthington; *Third Vice-President*, H. A. Goodykoontz, Bluefield, W. S. Coleman, Lewisburg; *Secretary-Treasurer*, J. Lester Hayman, Morgantown, Carl E. Furbee, Clarksburg; *Council Member*, Chas. V. Selby, Clarksburg, L. C. Harlan, Huntington.

The next annual meeting will be held in the City of Parkersburg, in June 1935.

Among the speakers of the convention were, Jerry McQuade, Albert Fritz, Dr. Roy B. Miller, Fred L. Fox, Thurston Merrell and F. J. Nichol.

A resolution adopted is to the effect that pharmacists should be represented on the Board of Health. The federation of State Pharmaceutical Associations was endorsed.

OFFICERS OF MARYLAND PHARMACEUTICAL ASSOCIATION.

Maryland Pharmaceutical Association elected the following officers: *Honorary President*, H. R. Steiner; *President*, Andrew F. Ludwig, Baltimore; *First Vice-President*, Harry W. Matheney, Cumberland; *Second Vice-President*, Melville Strasburger, Baltimore; *Third Vice-President*, A. A. M. Dewing, Centreville; *Secretary*, E. F. Kelly, Baltimore; *Treasurer*, Harry S. Harrison, Baltimore; *Editor*, Robert L. Swain, Baltimore. *Executive Committee: Chairman*, Charles C. Neal, Baltimore; W. B. Spire, Mt. Rainier; Aquilla Jackson, Baltimore; L. V. Johnson, St. Michaels; Samuel Y. Harris, Baltimore; Simon Solomon, Baltimore.

TEXAS BOARD OF PHARMACY.

The Texas Board of Pharmacy held its final examination for non-graduate pharmacists at Waco, Texas, May 14th, 15th and 16th, with 203 applicants in attendance. The Board elected new officers at the meeting. They are: John A. Weeks, Ballinger, *President;* W. H. Cousins of Dallas was reëlected *Secretary;* C. B. Allison was reëlected *Treasurer*. All members of the Board, including J. Dan Allen, Houston; Paul D. Carroll, Texarkana; E. E. Weaver, Fort Worth; Erwin Joseph, Austin; Mr. Weeks and Mr. Allison were in attendance.

C. M. Brewer, secretary of the Oklahoma State Board of Pharmacy, has been elected vice-president of the National Association of Boards of Pharmacy. Mr. Brewer will preside over the sixth district, which includes Oklahoma, Texas, Arkansas, New Mexico, Kansas, Louisiana and Missouri.

ALPHA ZETA OMEGA FRATERNITY.

Members of sixteen chapters of colleges and schools of pharmacy met in Baltimore, June 24th. Among the speakers were Doctors John C. Krantz, Jr., E. F. Kelly and David I. Macht.

NARCOTIC THEFTS.

Professional men and druggists, wholesale and retail, are urged by the Bureau of Narcotics to store all narcotics under lock and key, preferably in metal cabinets or safes, since the check-up of many thefts by narcotic agents has shown that they were committed without trouble due to the use of wooden cabinets and unlocked cases. Legal purveyors were cautioned also against letting the Government order forms issued to the drug trade and the medical profession fall into the hands of illicit traffickers and addicts.

In addition to opium, morphine and heroin thefts, in the two-year period, more than 700 ounces of cocaine, dionin, and other opium and coca leaf derivatives were stolen, these drugs bringing considerable return in the illicit traffic when addicts find it difficult to obtain morphine or heroin. While the manufacture of heroin is forbidden in this country, and the medical profession has voted against its general use, there are some small stocks on hand and it was from these stocks the thefts were reported.

REFORM ADVERTISING.

The newly formed advertising committee of the Proprietary Association will shortly establish headquarters in New York City with a staff of experts to make a study upon which to base its recommendations. The new group has been

charged with the responsibility of developing a plan for voluntary advertising control, to eradicate such evils as exaggerated claims and bad taste. An organization meeting in New York City during the week was attended by William Y. Preyer, chairman; Lee H. Bristol, chairman of the executive committee of the Association of National Advertisers; William S. Groom, James F. Hoge, legal expert, and Frank A. Blair, president of the association.

NEW JERSEY CODE MARK-UP SUSPENDED.

The fifteen per cent mark-up provision contained in Article 12 of the code of fair competition for the retail trade in the State of New Jersey was suspended by the State Industrial Recovery Administrator, effective May 24th, pending a study of distributive costs in the state. The suspension was considered as only temporary, however, and the provision may be either reaffirmed or revised within the next few weeks, depending on the results of the cost study.

The action came as a surprise to retailers, inasmuch as the mark-up had been granted for a trial period of sixty days and no change was expected before that time. Since the code was approved by Governor A. Harry Moore a few weeks ago the druggists had set up a code authority, opened offices in the Industrial Office Building, Newark, and had circulated lists of prices, including the mark-up, for many nationally advertised products.

BOOK NOTICES AND REVIEWS.

Volumetric Analysis. By H. P. STARCK, M.A., Head of the Science Department, The Technical College, Kingston-on-Thames, published by William Wood and Company, Baltimore, 1934; VIII + 228 + 31 pages. Price $3.00.

This text was originated in connection with the author's teaching of volumetric analysis to students reading for School certificate, University Scholarship, National Certificate, and Pharmaceutical, Medical and General examinations in chemistry in Great Britain. Portions of the work are designated for certain classes of students by definite headings, such as, "Inter. and Final B.Sc. Students" "For Degree Students," "Estimations for All Advanced Students." The articles and preparations which should be estimated by pharmaceutical students have their Latin Titles mentioned in parentheses and exceptions are indicated by an asterisk.

The subject matter includes a brief consideration of a large number of well-known analytical processes. Concise procedures are given and emphasis is placed on the explanation of equivalent weights. The book is divided into five sections treating of: I—Introduction, II—Acidimetry and Alkalimetry, III—Oxidation and Reduction, IV—Precipitation Methods, and V—Application Methods, appendices, index and qualitative analysis tables. A number of well-selected problems are included in each section.

The book is well suited to the purposes for which it is intended no doubt. Since we in this country do not have a type of examination similar to that which obtains in Great Britain, it is not likely that a text covering so wide a variety of materials will find extensive use here. The many pharmaceutical items treated of make the book of value and interest, however, to all who are engaged in the analysis of pharmaceutical chemicals—GLENN L. JENKINS.

The JOURNAL OF THE A. PH. A. is indebted to Dr. Edward Kremers, of the University of Wisconsin, for *Bulletin*, Series No. 1919, General Series No. 1703, "Phytochemistry," by Edward Kremers and colaborers, being No. III of the "Methane Series of Hydrocarbons."

NRA HANDBOOK.

The National Recovery Administration has compiled an authoritative guide in the form of a 30-page document, entitled, "What Is the NRA?" Descriptions are given of the various steps taken in formulating codes and suggestions are advanced to show why no two codes of fair competition are alike. They all must contain certain specified features.

INTERNATIONAL RED CROSS SOCIETY.

The International Red Cross Society will meet in Tokyo, October 19th to 29th. Elaborate preparations are being made by the Japanese Red Cross Society for the annual meeting of the Red Cross Society in Tokyo, which is to be held in the Japan Red Cross Society Building in Shiba Park.

Reports of Local Branches had to be deferred to a succeeding issue of the Journal.